

TRANSAXLE AND POWER TRANSFER UNIT

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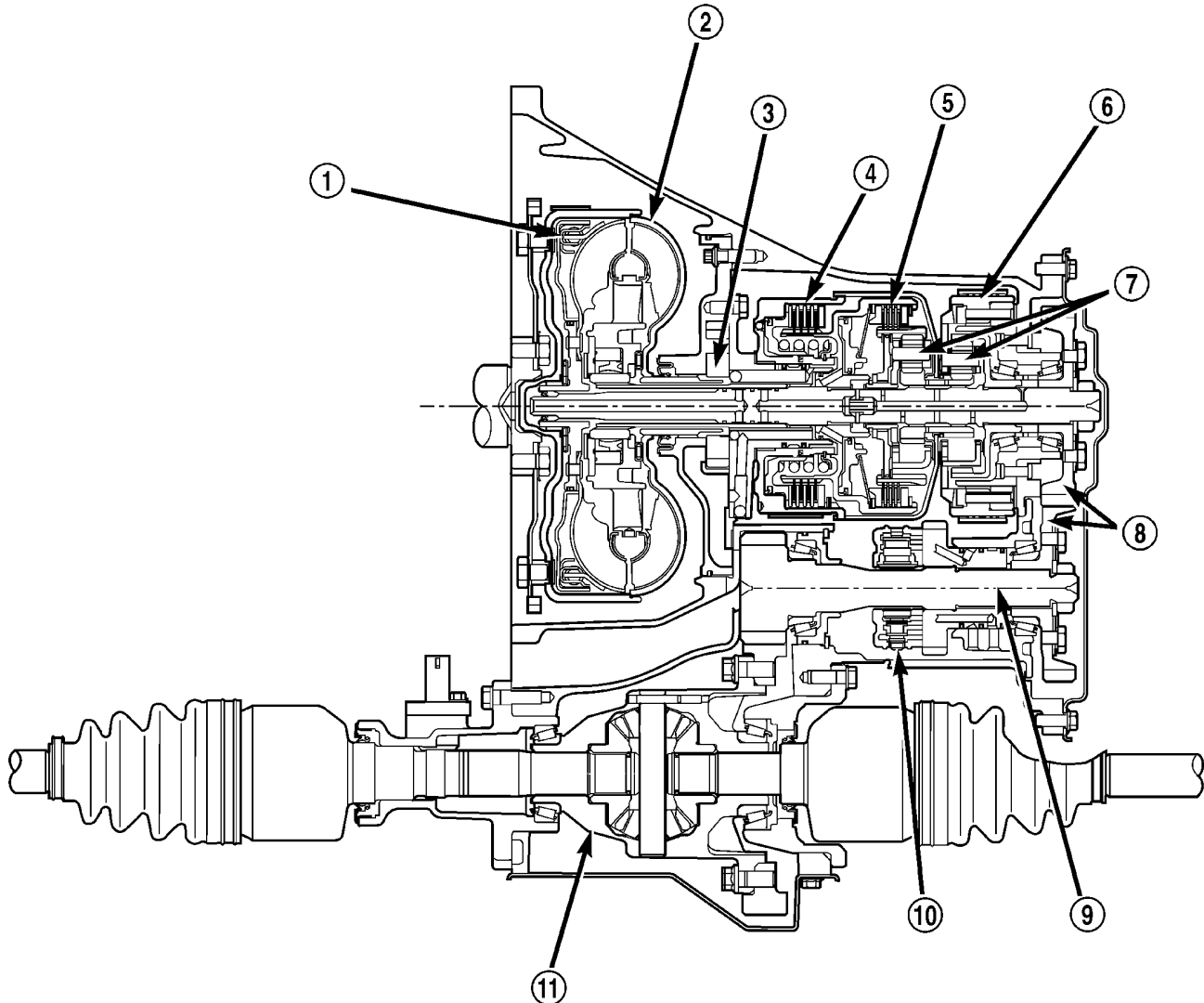
31TH AUTOMATIC TRANSAXLE

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DESCRIPTION AND OPERATION

31TH TRANSAXLE

**31TH Transaxle**

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- 1 - TORQUE CONVERTER CLUTCH
- 2 - TORQUE CONVERTER
- 3 - OIL PUMP
- 4 - FRONT CLUTCH
- 5 - REAR CLUTCH
- 6 - OVER-RUNNING CLUTCH

- 7 - PLANETARY GEARS
- 8 - TRANSFER GEARS
- 9 - TRANSFER SHAFT
- 10 - GOVERNOR
- 11 - DIFFERENTIAL

This transaxle combines torque converter, three speed transmission, final drive gearing, and differential into a front wheel drive system.

Within this transaxle, there are three primary areas:

DESCRIPTION AND OPERATION (Continued)

- (1) Main center line plus valve body.
- (2) Transfer shaft center line (includes governor and parking sprag).
- (3) Differential center line.

Center distances between the main rotating parts in these three areas are held precise to maintain a low noise level.

The torque converter, transaxle area, and differential are housed in an integral aluminum die casting. The differential oil sump is common with the transaxle sump. Separate filling of the differential is NOT necessary.

The torque converter is attached to the crankshaft through a flexible driving plate. Cooling of the converter is accomplished by circulating the transaxle fluid through a remote cooler. There are two types of coolers used. An oil-to-water type cooler located in the radiator side tank and/or an oil-to-air heat exchanger. The torque converter assembly is a sealed unit that cannot be disassembled.

The transaxle fluid is filtered by an internal filter attached to the lower side of the valve body assembly.

Engine torque is transmitted to the torque converter and then through the input shaft to multiple-disc clutches in the transaxle. The power flow depends on the application of the clutches and bands. Refer to Elements in Use Chart in Diagnosis and Tests section.

The transaxle consists of:

- Two multiple-disc clutches
- An overrunning clutch
- Two servos
- A hydraulic accumulator
- Two bands
- Two planetary gear sets

This provides three forward ratios and a reverse ratio. The common sun gear of the planetary gear sets is connected to the front clutch by a driving shell. The driving shell is splined to the sun gear and front clutch retainer. The hydraulic system consists of an oil pump and a single valve body which contains all of the valves except the governor valves. The transaxle sump and differential sump are both vented through the dipstick. Output torque from the main center line is delivered through helical gears to the transfer shaft. This gear set is a factor in the transaxle final drive (axle) ratio. The shaft also carries the governor and parking sprag. An integral helical gear on the transfer shaft drives the differential ring gear.

FLUID REQUIREMENT

NOTE: Refer to the maintenance schedules in Group 0, Lubrication and Maintenance for the rec-

ommended maintenance (fluid/filter change) intervals for this transaxle.

NOTE: Refer to Service Procedures in this group for fluid level checking procedures.

NOTE: The transmission and differential sump have a common oil sump with an opening between the two.

DESCRIPTION

Mopar® ATF+3 (Automatic Transmission Fluid-Type 7176) is required in this transaxle. Substitute fluids can induce torque converter clutch shudder.

Mopar® ATF+3 (Automatic Transmission Fluid-Type 7176) when new is red in color. The ATF is dyed red so it can be identified from other fluids used in the vehicle such as engine oil or antifreeze. The red color is not permanent and is not an indicator of fluid condition. As the vehicle is driven, the ATF will begin to look darker in color and may eventually become brown. This is normal. A dark brown/black fluid accompanied with a burnt odor and/or deterioration in shift quality may indicate fluid deterioration or transmission component failure.

FLUID ADDITIVES

DaimlerChrysler strongly recommends against the addition of any fluids to the transmission, other than those automatic transmission fluids listed above. Exceptions to this policy are the use of special dyes to aid in detecting fluid leaks.

Various "special" additives and supplements exist that claim to improve shift feel and/or quality. These additives and others also claim to improve converter clutch operation and inhibit overheating, oxidation, varnish, and sludge. These claims have not been supported to the satisfaction of DaimlerChrysler and these additives must not be used. The use of transmission "sealers" should also be avoided, since they may adversely affect the integrity of transmission seals.

TORQUE CONVERTER CLUTCH

A torque converter clutch is standard on all vehicles. The torque converter clutch is activated only in direct drive and is controlled by the engine electronics. A solenoid on the valve body, is powered by the powertrain control module to activate torque converter clutch.

HYDRAULIC CONTROL SYSTEM

The hydraulic control system makes the transaxle fully automatic, and has four important functions to

DESCRIPTION AND OPERATION (Continued)

perform. The components of any automatic control system may be grouped into the following basic groups:

The pressure supply system, the pressure regulating valves, the flow control valves, the clutches, and band servos.

Taking each of these basic groups or systems in turn, the control system may be described as follows:

PRESSURE SUPPLY SYSTEM

The pressure supply system consists of an oil pump driven by the engine through the torque converter. The single pump furnishes pressure for all the hydraulic and lubrication requirements. Oil pump housing assemblies are available with preselected pump gears.

PRESSURE REGULATING VALVES

The pressure regulating valve controls line pressure dependent on throttle opening. The governor valve transmits regulated pressure to the valve body (in conjunction with vehicle speed) to control upshift and downshift.

The throttle valve transmits regulated pressure to the transaxle (dependent on throttle position) to control upshift and downshift.

FLOW CONTROL VALVES

The manual valve provides the different transaxle drive ranges as selected by the vehicle operator.

The 1-2 shift valve automatically shifts the transaxle from first to second or from second to first, depending on the vehicle operation.

The 2-3 shift valve automatically shifts the transaxle from second to third or from third to second depending on the vehicle operation.

The kickdown valve makes possible a forced downshift from third to second, second to first, or third to first (depending on vehicle speed). This can be done by depressing the accelerator pedal past the detent feel near wide open throttle.

The shuttle valve has two separate functions and performs each independently of the other. The first is providing fast release of the kickdown band, and smooth front clutch engagement when a lift-foot upshift from second to third is made. The second function is to regulate the application of the kickdown servo and band when making third to second kickdown.

The by-pass valve provides for smooth application of the kickdown band on 1-2 upshifts.

The torque converter clutch solenoid allows for the electronic control of the torque converter clutch. It also disengages the torque converter at closed throttle. This is done during engine warm-up, and part-throttle acceleration.

The switch valve directs oil to apply the torque converter clutch in one position. The switch valve releases the torque converter clutch in the other position.

CLUTCHES, BAND SERVOS, AND ACCUMULATOR

The front and rear clutch pistons, and both servo pistons are moved hydraulically to engage the clutches and apply the bands. The pistons are released by spring tension when hydraulic pressure is released. On the 2-3 upshift, the kickdown servo piston is released by spring tension and hydraulic pressure.

The accumulator controls the hydraulic pressure on the apply side of the kickdown servo during the 1-2 upshift; thereby, cushioning the kickdown band application at any throttle position.

GEARSHIFT AND PARKING LOCK CONTROLS

The transaxle is controlled by a lever type gearshift incorporated within the steering column. The control has six selector lever positions: P (park), R (reverse), N (neutral), and D (drive), 2 (second), and 1 (first). The parking lock is applied by moving the selector lever past a gate to the P position. Do not apply the parking lock until the vehicle has stopped; otherwise, a severe ratchet noise will occur.

GOVERNOR

The governor may be serviced by removing the transaxle oil pan and valve body assembly. The governor may be unbolted from the governor support and removed from the transaxle for reconditioning or replacement.

When cleaning or assembling the governor, make sure the governor valves move freely in the bores of the governor body.

COOLER BYPASS VALVE

The cooler bypass valve (Fig. 1) is designed to bypass the transaxle oil cooler circuit in cold weather conditions, or when circuit restriction exceeds 25–30 p.s.i. The valve consists of an integrated check ball and spring, and a return tube to carry bypassed oil back to the pump. The bypass valve is mounted to the valve body transfer plate and is sealed with a rubber o-ring seal (Fig. 2).

DIAGNOSIS AND TESTING

TRANSAXLE PRELIMINARY DIAGNOSIS

Automatic transaxle malfunctions are usually caused by the following general conditions:

DIAGNOSIS AND TESTING (Continued)

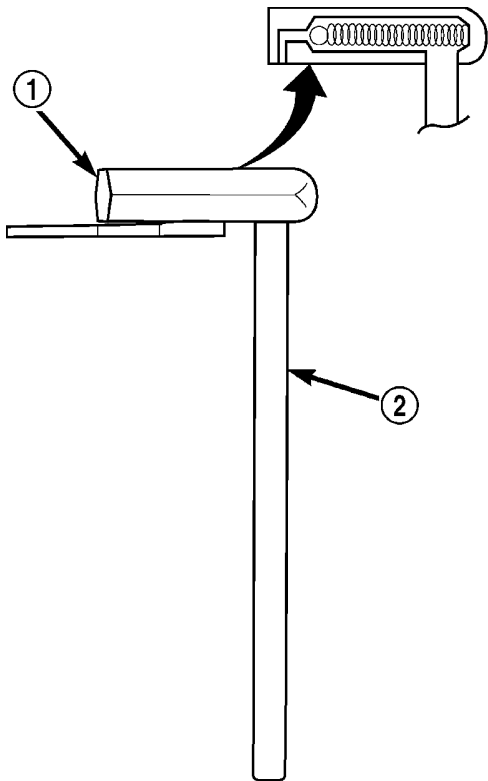


Fig. 1 Cooler Bypass Valve

- 1 - BYPASS VALVE
2 - TUBE

- Improper fluid level/condition
- Poor engine performance
- Improper engine or transaxle adjustments
- Transaxle hydraulic malfunctions
- Transaxle mechanical malfunctions

Diagnosis of transaxle problems should always begin with checking the easily accessible variables:

- Fluid level and condition
- Gearshift cable adjustment
- Throttle valve cable adjustment

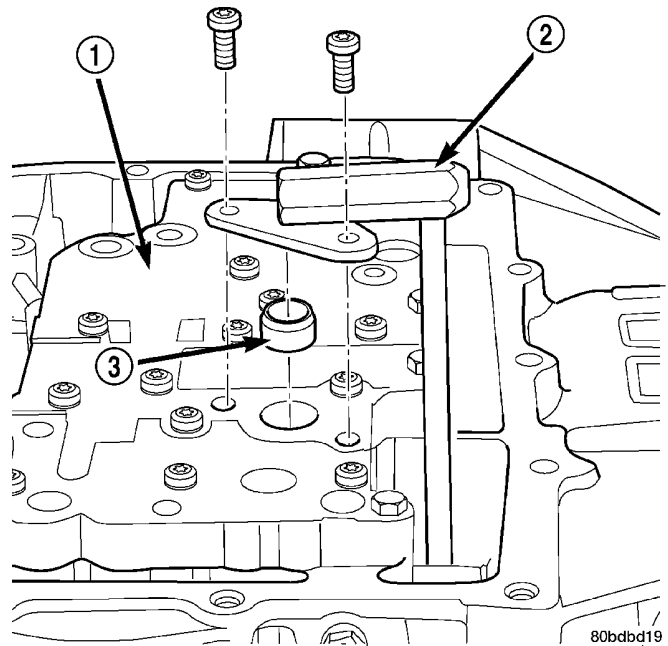


Fig. 2 Bypass Valve Location (If Equipped)

- 1 - TRANSFER PLATE
2 - BYPASS VALVE
3 - SEAL

After verifying or adjusting these variables, road test the vehicle to determine if the problem has been corrected or that further diagnosis is necessary. If the problem still exists, refer to the following diagnosis charts to aid in determining the source or cause of failure.

Hydraulic pressure tests should be performed when a transaxle internal failure is suspected. The hydraulic flow charts, in the Schematics and Diagrams section of this group, outline fluid flow and hydraulic circuitry. Circuit operation is provided for all gear ranges. Normal working pressures are also supplied for each of the gear ranges.

DIAGNOSIS AND TESTING (Continued)

TRANSAXLE DIAGNOSIS CHARTS

CONDITION	POSSIBLE CAUSES	CORRECTION
HARSH ENGAGEMENT (FROM NEUTRAL TO DRIVE OR REVERSE)	1. Fluid Level Low	1. Add Fluid
	2. Throttle Linkage Misadjusted	2. Adjust linkage - setting may be too long.
	3. Excessive Pinion Backlash	3. Check per Service Manual. Correct as needed.
	4. Hydraulic Pressure Incorrect	4. Check pressure. Remove, overhaul or adjust valve body as needed.
	5. Band Misadjusted.	5. Adjust rear band.
	6. Valve Body Check Balls Missing.	6. Inspect valve body for proper check ball installation.
	7. Clutch, band or planetary component Damaged.	7. Remove, disassemble and repair transmission as necessary.
	8. Converter Clutch (if equipped) Faulty.	8. Replace converter and flush cooler and line before installing new converter.
DELAYED ENGAGEMENT (FROM NEUTRAL TO DRIVE OR REVERSE)	1. Fluid Level Low.	1. Correct level and check for leaks.
	2. Filter Clogged.	2. Change filter.
	3. Gearshift Linkage Misadjusted.	3. Adjust linkage and repair linkage if worn or damaged.
	4. Rear Band Misadjusted.	4. Adjust band.
	5. Valve Body Filter Plugged.	5. Replace fluid and filter. If oil pan and old fluid were full of clutch disc material and/or metal particles, overhaul will be necessary.
	6. Oil Pump Gears Worn/Damaged.	6. Remove transmission and replace oil pump.
	7. Hydraulic Pressure Incorrect.	7. Perform pressure test, remove transmission and repair as needed.
	8. Reaction Shaft Seal Rings Worn/Broken.	8. Remove transmission, remove oil pump and replace seal rings.
	9. Rear Clutch/Input Shaft, Rear Clutch Seal Rings Damaged.	9. Remove and disassemble transmission and repair as necessary.
	10. Governor Valve Stuck.	10. Remove and inspect governor components. Replace worn or damaged parts.
	11. Regulator Valve Stuck.	11. Clean.

DIAGNOSIS AND TESTING (Continued)

CONDITION	POSSIBLE CAUSES	CORRECTION
NO DRIVE RANGE (REVERSE OK)	1. Fluid Level Low.	1. Add fluid and check for leaks if drive is restored.
	2. Gearshift Linkage/Cable Loose/Misadjusted.	2. Repair or replace linkage components.
	3. Rear Clutch Burnt.	3. Remove and disassemble transmission and rear clutch and seals. Repair/replace worn or damaged parts as needed.
	4. Valve Body Malfunction.	4. Remove and disassemble valve body. Replace assembly if any valves or bores are damaged.
	5. Transmission Overrunning Clutch Broken.	5. Remove and disassemble transmission. Replace overrunning clutch.
	6. Input Shaft Seal Rings Worn/Damaged.	6. Remove and disassemble transmission. Replace seal rings and any other worn or damaged parts.
	7. Front Planetary Failed Broken.	7. Remove and repair.
NO DRIVE OR REVERSE (VEHICLE WILL NOT MOVE)	1. Fluid Level Low.	1. Add fluid and check for leaks if drive is restored.
	2. Gearshift Linkage/Cable Loose/Misadjusted.	2. Inspect, adjust and reassemble linkage as needed. Replace worn/damaged parts.
	3. Filter Plugged.	3. Remove and disassemble transmission. Repair or replace failed components as needed. Replace filter. If filter and fluid contained clutch material or metal particles, an overhaul may be necessary. Perform lube flow test. Flush oil. Replace cooler as necessary.
	4. Oil Pump Damaged.	4. Perform pressure test to confirm low pressure. Replace pump body assembly if necessary.
	5. Valve Body Malfunctioned.	5. Check press and inspect valve body. Replace valve body (as assembly) if any valve or bore is damaged. Clean and reassemble correctly if all parts are in good condition.
	6. Transmission Internal Component Damaged.	6. Remove and disassemble transmission. Repair or replace failed components as needed. Remove and disassemble transmission. Repair or replace failed components as needed.
	7. Park Sprag not Releasing - Check Stall Speed, Worn/Damaged/Stuck.	7. Remove, disassemble, repair.
	8. Torque Converter Damage.	8. Inspect and replace as required.

DIAGNOSIS AND TESTING (Continued)

CONDITION	POSSIBLE CAUSES	CORRECTION
SHIFTS DELAYED OR ERRATIC (ALSO SHIFTS HARSH AT TIMES)	1. Fluid Level Low/High.	1. Correct fluid level and check for leaks if low.
	2. Fluid Filter Clogged.	2. Replace filter. If filter and fluid contained clutch material or metal particles, an overhaul may be necessary. Perform lube flow test.
	3. Throttle Linkage Misadjusted.	3. Adjust linkage as described in service section.
	4. Throttle Linkage Binding.	4. Check cable for binding. Check for return to closed throttle at transmission.
	5. Gearshift Linkage/Cable Misadjusted.	5. Adjust linkage/cable as described in service section.
	6. Governor Valve Sticking.	6. Inspect, clean or repair.
	7. Governor Seal Rings Worn/Damaged.	7. Inspect/replace.
	8. Clutch or Servo Failure.	8. Remove valve body and air test clutch, and band servo operation. Disassemble and repair transmission as needed.
	9. Front Band Misadjusted.	9. Adjust band.
	10. Pump Suction Passage Leak.	10. Check for excessive foam on dipstick after normal driving. Check for loose pump bolts, defective gasket. Replace pump assembly if needed.
NO REVERSE (D RANGES OK)	1. Gearshift Linkage/Cable Misadjusted/Damaged.	1. Repair or replace linkage parts as needed.
	2. Rear Band Misadjusted/Worn.	2. Adjust band; replace.
	3. Valve Body Malfunction.	3. Remove and service valve body. Replace valve body if any valves or valve bores are worn or damaged.
	4. Rear Servo Malfunction.	4. Remove and disassemble transmission. Replace worn/damaged servo parts as necessary.
	5. Direct Clutch in Overdrive Worn	5. Disassemble overdrive. Replace worn or damaged parts.
	6. Front Clutch Burnt.	6. Remove and disassemble transmission. Replace worn, damaged clutch parts as required.
HAS FIRST/REVERSE ONLY (NO 1-2 OR 2-3 UPSHIFT)	1. Governor Valve, Shaft, Weights or Body Damaged/Stuck.	1. Remove governor assembly and clean or repair as necessary.
	2. Valve Body Malfunction.	2. Stuck 1-2 shift valve or governor plug.
	3. Front Servo/Kickdown Band Damaged/Burned.	3. Repair/replace.
MOVES IN 2ND OR 3RD GEAR, ABRUPTLY DOWNSHIFTS TO LOW	1. Valve Body Malfunction.	1. Remove, clean and inspect. Look for stuck 1-2 valve or governor plug.
	2. Governor Valve Sticking.	2. Remove, clean and inspect. Replace faulty parts.

DIAGNOSIS AND TESTING (Continued)

CONDITION	POSSIBLE CAUSES	CORRECTION
NO LOW GEAR (MOVES IN 2ND OR 3RD GEAR ONLY)	1. Governor Valve Sticking.	1. Remove governor, clean, inspect and repair as required.
	2. Valve Body Malfunction.	2. Remove, clean and inspect. Look for sticking 1-2 shift valve, 2-3 shift valve, governor plug or broken springs.
	3. Front Servo Piston Cocked in Bore.	3. Inspect servo and repair as required.
	4. Front Band Linkage Malfunction	4. Inspect linkage and look for bind in linkage.
NO KICKDOWN OR NORMAL DOWNSHIFT	1. Throttle Linkage Misadjusted.	1. Adjust linkage.
	2. Accelerator Pedal Travel Restricted.	2. Floor mat under pedal, accelerator cable worn or brackets bent.
	3. Governor/Valve Body Hydraulic Pressures Too High or Too Low Due to Sticking Governor, Valve Body Malfunction or Incorrect Hydraulic Control Pressure Adjustments.	3. Perform hydraulic pressure tests to determine cause and repair as required. Correct valve body pressure adjustments as required.
	4. Valve Body Malfunction.	4. Perform hydraulic pressure tests to determine cause and repair as required. Correct valve body pressure adjustments as required.
	5. Valve Body Malfunction.	5. Sticking 1-2, 2-3 shift valves, governor plugs, 3-4 solenoid, 3-4 shift valve, 3-4 timing valve.
STUCK IN LOW GEAR (WILL NOT UPSHIFT)	1. Throttle Linkage Misadjusted/Stuck.	1. Adjust linkage and repair linkage if worn or damaged. Check for binding cable.
	2. Gearshift Linkage Misadjusted.	2. Adjust linkage and repair linkage if worn or damaged.
	3. Governor/Valve Body, Governor Valve Stuck Closed; Loose Output Shaft Support or Governor Housing Bolts, Leaking Seal Rings or Valve Body Problem (i.e., Stuck 1- 2 Shift Valve/Gov. Plug).	3. Check line and governor pressures to determine cause. Correct as required.
	4. Front Band Out of Adjustment.	4. Adjust Band.
	5. Clutch or Servo Malfunction.	5. Air pressure check operation of clutches and bands. Repair faulty component.
CREEPS IN NEUTRAL	1. Gearshift Linkage Misadjusted.	1. Adjust linkage.
	2. Rear Clutch Dragging/Warped Welded.	2. Disassemble and repair.
	3. Valve Body Malfunction.	3. Perform hydraulic pressure test to determine cause and repair as required.

DIAGNOSIS AND TESTING (Continued)

CONDITION	POSSIBLE CAUSES	CORRECTION
BUZZING NOISE	1. Fluid Level Low	1. Add fluid and check for leaks.
	2. Shift Cable Misassembled.	2. Route cable away from engine and bell housing.
	3. Valve Body Misassembled.	3. Remove, disassemble, inspect valve body. Reassemble correctly if necessary. Replace assembly if valves or springs are damaged. Check for loose bolts or screws.
	4. Pump Passages Leaking	4. Check pump for porous casting, scores on mating surfaces and excess rotor clearance. Repair as required. Loose pump bolts.
	5. Cooling System Cooler Plugged.	5. Flow check cooler circuit. Repair as needed.
	6. Overrunning Clutch Damaged.	6. Replace clutch.
SLIPS IN REVERSE ONLY	1. Fluid Level Low.	1. Add fluid and check for leaks.
	2. Gearshift Linkage Misadjusted.	2. Adjust linkage.
	3. Rear Band Misadjusted.	3. Adjust band.
	4. Rear Band Worn.	4. Replace as required.
	5. Hydraulic Pressure Too Low.	5. Perform hydraulic pressure tests to determine cause.
	6. Rear Servo Leaking.	6. Air pressure check clutch-servo operation and repair as required.
	7. Band Linkage Binding.	7. Inspect and repair as required.
SLIPS IN FORWARD DRIVE RANGES	1. Fluid Level Low.	1. Add fluid and check for leaks.
	2. Fluid Foaming.	2. Check for high oil level, bad pump gasket or seals, dirt between pump halves and loose pump bolts. Replace pump if necessary.
	3. Throttle Linkage Misadjusted.	3. Adjust linkage.
	4. Gearshift Linkage Misadjusted.	4. Adjust linkage.
	5. Rear Clutch Worn.	5. Inspect and replace as needed.
	6. Low Hydraulic Pressure Due to Worn Pump, Incorrect Control Pressure Adjustments, Valve Body Warpage or Malfunction, Sticking Governor, Leaking Seal Rings, Clutch Seals Leaking, Servo Leaks, Clogged Filter or Cooler Lines	6. Perform hydraulic and air pressure tests to determine cause.
	7. Rear Clutch Malfunction, Leaking Seals or Worn Plates.	7. Air pressure check clutch-servo operation and repair as required.
	8. Overrunning Clutch Worn, Not Holding (Slips in 1 Only).	8. Replace Clutch.
SLIPS IN LOW GEAR "D" ONLY, BUT NOT IN 1 POSITION	Overrunning Clutch Faulty.	Replace overrunning clutch.

DIAGNOSIS AND TESTING (Continued)

CONDITION	POSSIBLE CAUSES	CORRECTION
GROWLING, GRATING OR SCRAPING NOISES	1. Drive Plate Broken.	1. Replace.
	2. Torque Converter Bolts Hitting Dust Shield.	2. Dust shield bent. Replace or repair.
	3. Planetary Gear Set Broken/Seized.	3. Check for debris in oil pan and repair as required.
	4. Overrunning Clutch Worn/Broken.	4. Inspect and check for debris in oil pan. Repair as required.
	5. Oil Pump Components Scored/Binding.	5. Remove, inspect and repair as required.
	6. Output Shaft Bearing or Bushing Damaged.	6. Remove, inspect and repair as required.
	7. Clutch Operation Faulty.	7. Perform air pressure check and repair as required.
	8. Front and Rear Bands Misadjusted.	8. Adjust bands.
DRAGS OR LOCKS UP	1. Fluid Level Low.	1. Check and adjust level.
	2. Clutch Dragging/Failed	2. Air pressure check clutch operation and repair as required.
	3. Front or Rear Band Misadjusted.	3. Adjust bands.
	4. Case Leaks Internally.	4. Check for leakage between passages in case.
	5. Servo Band or Linkage Malfunction.	5. Air pressure check servo operation and repair as required.
	6. Overrunning Clutch Worn.	6. Remove and inspect clutch. Repair as required.
	7. Planetary Gears Broken.	7. Remove, inspect and repair as required (look for debris in oil pan).
WHINE/NOISE RELATED TO ENGINE SPEED	1. Fluid Level Low.	1. Add fluid and check for leaks.
	2. Shift Cable Incorrect Routing.	2. Check shift cable for correct routing. Should not touch engine or bell housing.
TORQUE CONVERTER LOCKS UP IN SECOND AND/OR THIRD GEAR	Lockup Solenoid, Relay or Wiring Shorted/Open.	Test solenoid, relay and wiring for continuity, shorts or grounds. Replace solenoid and relay if faulty. Repair wiring and connectors as necessary.
HARSH 1-2 OR 2-3 SHIFTS	Lockup Solenoid Malfunction.	Remove valve body and replace solenoid assembly.
NO START IN PARK OR NEUTRAL	1. Gearshift Linkage/Cable Misadjusted.	1. Adjust linkage/cable.
	2. Neutral Switch Wire Open/Cut.	2. Check continuity with test lamp. Repair as required.
	3. Neutral Switch Faulty.	3. Refer to service section for test and replacement procedure.
	4. Neutral Switch Connect Faulty.	4. Connectors spread open. Repair.
	5. Valve Body Manual Lever Assembly Bent/Worn/Broken.	5. Inspect lever assembly and replace if damaged.

DIAGNOSIS AND TESTING (Continued)

CONDITION	POSSIBLE CAUSES	CORRECTION
NO REVERSE (OR SLIPS IN REVERSE)	1. Direct Clutch Pack (front clutch) Worn.	1. Disassemble unit and rebuild clutch pack.
	2. Rear Band Misadjusted.	2. Adjust band.
	3. Front Clutch Malfunctioned/Burnt.	3. Air pressure test clutch operation. Remove and rebuild if necessary.
OIL LEAKS (ITEMS LISTED REPRESENT POSSIBLE LEAK POINTS AND SHOULD ALL BE CHECKED.)	1. Fluid Lines and Fittings Loose/Leaks/Damaged.	1. Tighten fittings. If leaks persist, replace fittings and lines if necessary.
	2. Filler Tube (where tube enters case) Leaks/Damaged.	2. Replace tube seal. Inspect tube for cracks in tube.
	3. Pressure Port Plug Loose Loose/Damaged.	3. Tighten to correct torque. Replace plug or reseal if leak persists.
	4. Pan Gasket Leaks.	4. Tighten pan screws to 150 inch pounds. If leaks persist, replace gasket. Do no over tighten screws.
	5. Valve Body Manual Lever Shaft Seal Leaks/Worn.	5. Replace shaft seal.
	6. Rear Bearing Access Plate Leaks.	6. Replace gasket. Tighten screws.
	7. Gasket Damaged or Bolts are Loose.	7. Replace bolts or gasket or tighten both.
	8. Adapter/Extension Gasket Damaged Leaks/Damaged.	8. Replace gasket.
	9. Neutral Switch Leaks/Damaged.	9. Replace switch and gasket.
	10. Converter Housing Area Leaks.	10. Check for leaks at seal caused by worn seal or burr on converter hub (cutting seal), worn bushing, missing oil return, oil in front pump housing or hole plugged. Check for leaks past O-ring seal on pump or past pump-to-case bolts; pump housing porous, oil coming out vent due to overfill or leak past front band shaft access plug.
	11. Pump Seal Leaks/Worn/Damaged.	11. Replace seal.
	12. Torque Converter Weld Leak/Cracked Hub.	12. Replace converter.
	13. Case Porosity Leaks.	13. Replace case.

ROAD TEST

Prior to performing a road test, check the fluid level and throttle valve cable adjustments.

During the road test, the transaxle should be operated in each position to check for slipping and any variation in shifting.

If vehicle operates at high speeds, but has poor acceleration, the converter's overrunning clutch may be slipping. If acceleration is normal, but high throttle opening is needed for high speeds, the stator clutch may have seized.

Observe closely for slipping or engine speed flare-up. Slipping or flare-up in any gear usually indicates clutch, band, or overrunning clutch problems. If the condition is far advanced, an overhaul will probably be necessary to restore normal operation.

In most cases, the clutch or band that is slipping can be determined by noting the transaxle operation in all selector positions and then comparing which internal units are applied in those positions. The Elements-in-Use Chart provides a basis for road test analysis.

DIAGNOSIS AND TESTING (Continued)

LEVER POSITION	START SAFETY	PARK SPRAG	CLUTCHES				BANDS	
			FRONT	REAR	LOCKUP	OVER-RUNNING	(KICKDOWN) FRONT	LOW/REV REAR
P — PARK	X	X						
R — REVERSE			X					X
N — NEUTRAL	X							
D — DRIVE								
First				X		X		
Second				X			X	
Third			X	X	X			
2 — SECOND								
First				X		X		
Second				X			X	
1 — Low				X				X

The rear clutch is applied in both the D first gear and 1 first gear positions. Also, the overrunning clutch is applied in D first gear and the low/reverse band is applied in 1 first gear position. If the transaxle slips in D range first gear, but does not slip in 1 first gear, the overrunning clutch is slipping. Similarly, if the transaxle slips in any two forward gears, the rear clutch is slipping.

Using the same procedure, the rear clutch and front clutch are applied in D third gear. If the transaxle slips in third gear, either the front clutch or the rear clutch is slipping. By selecting another gear that does not use one of those units, the unit that is slipping can be determined. If the transaxle also slips in reverse, the front clutch is slipping. If the transaxle does not slip in reverse, the rear clutch is slipping.

The process of elimination can be used to detect any unit that slips and to confirm proper operation of good units. Road testing can usually diagnose slipping units, although the actual cause of the problem may not be detected. Practically any condition can be caused by leaking hydraulic circuits or sticking valves.

Therefore, unless the condition is obvious, the transaxle should never be disassembled until hydraulic pressure tests have been performed.

HYDRAULIC PRESSURE TESTS

Pressure testing is a very important step in the diagnostic procedure. These tests usually reveal the cause of most transaxle problems.

Before performing pressure tests, check fluid level and condition, as well as control cable adjustments. Fluid must be at operating temperature (150-200 degrees F.).

Install an engine tachometer. Raise vehicle on a hoist that allows front wheels to turn, and position tachometer so it can be read.

Disconnect throttle cable and shift cable from transaxle levers so they can be controlled from outside the vehicle.

Attach 100 psi gauges (C-3292) to ports required for test being conducted. A 300 psi gauge (C-3293SP) is required for reverse pressure test at rear servo.

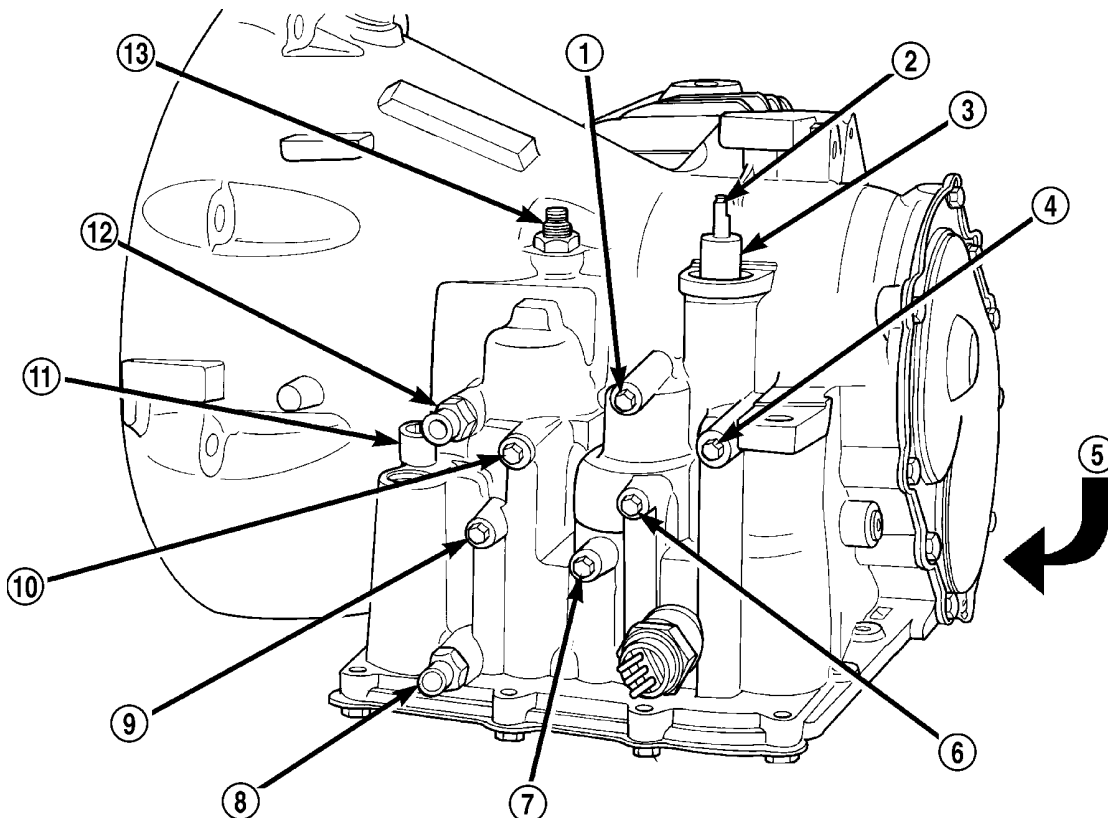
Test port locations are shown in (Fig. 3).

TEST ONE (SELECTOR IN 1)

- (1) Attach gauges to line and low-reverse ports.
- (2) Operate engine at 1000 rpm for test.
- (3) Move selector lever on transaxle all the way rearward (1 position).
- (4) Read pressures on both gauges as throttle lever on transaxle is moved from full clockwise position to full counterclockwise position.
- (5) Line pressure should read 52 to 58 psi with throttle lever clockwise. Pressure should gradually increase to 80 to 88 psi as lever is moved counterclockwise.
- (6) Low/reverse pressure should read the same as line pressure, within 3 psi.
- (7) This tests pump output, pressure regulation, and condition of rear clutch and rear servo hydraulic circuits.

TEST TWO (SELECTOR IN 2)

- (1) Attach one gauge to line pressure port, and tee another gauge into lower cooler line fitting. This will allow lubrication pressure readings to be taken..
- (2) Operate engine at 1000 rpm for test.



8050053c

Fig. 3 Test Port Locations

- | | |
|--|--|
| 1 - ACCUMULATOR VENT | 8 - TO COOLER |
| 2 - MANUAL THROTTLE LEVER SHAFT | 9 - KICKDOWN RELEASE (FRONT CLUTCH) |
| 3 - MANUAL SHIFT LEVER SHAFT | 10 - KICKDOWN APPLY |
| 4 - LOW-REVERSE PRESSURE | 11 - CONVERTER CLUTCH SOLENOID CONNECTOR |
| 5 - GOVERNOR PRESSURE (BELOW DIFFERENTIAL COVER ON RIGHT SIDE) | 12 - FROM COOLER |
| 6 - LINE PRESSURE | 13 - KICKDOWN BAND ADJUSTING SCREW |
| 7 - KICKDOWN APPLY AT ACCUMULATOR | |

(3) Move selector lever on transaxle one detent forward from full rearward position. This is selector 2 position.

(4) Read pressures on both gauges as throttle lever on transaxle is moved from full clockwise position to full counterclockwise position.

(5) Line pressure should read 52 to 58 psi with throttle lever clockwise. Pressure should gradually increase to 80 to 88 psi. as lever is moved counterclockwise.

(6) Lubrication pressure should be 10 to 25 psi with lever clockwise and 10 to 35 psi with lever at full counterclockwise.

(7) This tests pump output, pressure regulation, and condition of rear clutch and lubrication hydraulic circuits.

TEST THREE (SELECTOR IN D)

(1) Attach gauges to line and kickdown release ports.

(2) Operate engine at 1600 rpm for test.

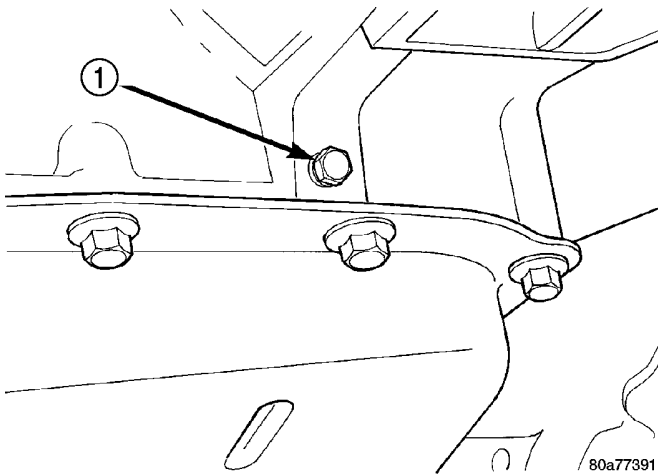
(3) Move selector lever on transaxle two detents forward from full rearward position. This is selector D position.

(4) Read pressures on both gauges as throttle lever on transaxle is moved from full clockwise to the full counterclockwise position.

(5) Line pressure should read 52 to 58 psi with throttle lever clockwise. Pressure should gradually increase to 80 to 88 psi. as lever is moved counterclockwise.

(6) Kickdown release is pressurized only in direct drive and should be same as line pressure within 3 psi, up to kickdown point.

DIAGNOSIS AND TESTING (Continued)

**Fig. 4 Governor Pressure Tap**

1 – GOVERNOR PRESSURE PLUG

(7) This tests pump output, pressure regulation, and condition of rear clutch, front clutch, and hydraulic circuits.

TEST FOUR (SELECTOR IN REVERSE)

(1) Attach 300 psi gauge (C-3292SP) to low-reverse port.

(2) Operate engine at 1600 rpm for test.

(3) Move selector lever on transaxle four detents forward from full rearward position. This is selector R position.

(4) Low/reverse pressure should read 180 to 220 psi with throttle lever clockwise. Pressure should gradually increase to 260 to 300 psi. as lever is moved counterclockwise.

(5) This tests pump output, pressure regulation, and condition of front clutch and rear servo hydraulic circuits.

(6) Move selector lever on transaxle to D position to check that low/reverse pressure drops to zero.

(7) This tests for leakage into rear servo, due to case porosity, which can cause reverse band burn out.

TEST RESULT INDICATIONS

(1) If proper line pressure, minimum to maximum, is found in any one test, the pump and pressure regulator are working properly.

(2) Low pressure in D, 1, and 2 but correct pressure in R, indicates rear clutch circuit leakage.

(3) Low pressure in D and R, but correct pressure in 1 indicates front clutch circuit leakage.

(4) Low pressure in R and 1, but correct pressure in 2 indicates rear servo circuit leakage.

(5) Low line pressure in all positions indicates a defective pump, a clogged filter, or a stuck pressure regulator valve.

GOVERNOR PRESSURE

Test only if transaxle shifts at wrong vehicle speeds when throttle cable is correctly adjusted.

(1) Connect a 100 psi gauge to governor pressure port. It is located at lower right side of case, below differential cover (Fig. 4).

(2) Operate transaxle in third gear to read pressures. The governor pressure should respond smoothly to changes in mph and should return to 0 to 3 psi when vehicle is stopped. High pressure (above 3 psi) at standstill will prevent the transaxle from downshifting.

THROTTLE PRESSURE

No gauge port is provided for throttle pressure. Incorrect throttle pressure should be suspected if part throttle upshift speeds are either delayed or occur too early in relation to vehicle speed. Engine runaway on shifts can also be an indicator of low throttle pressure setting, or misadjusted throttle cable.

In no case should throttle pressure be adjusted until the transaxle throttle cable adjustment has been verified to be correct.

CLUTCH AND SERVO AIR PRESSURE TESTS

A no drive condition might exist even with correct fluid pressure, because of inoperative clutches or bands. The inoperative units, clutches, bands, and servos can be located through a series of tests. This is done by substituting air pressure for fluid pressure (Fig. 5).

The front and rear clutches, kickdown servo, and low-reverse servo may be tested by applying air pressure to their respective passages. To make air pressure tests, proceed as follows:

NOTE: Compressed air supply must be free of all dirt or moisture. Use a pressure of 30 psi.

Remove oil pan and valve body. Refer to Valve Body for removal procedure.

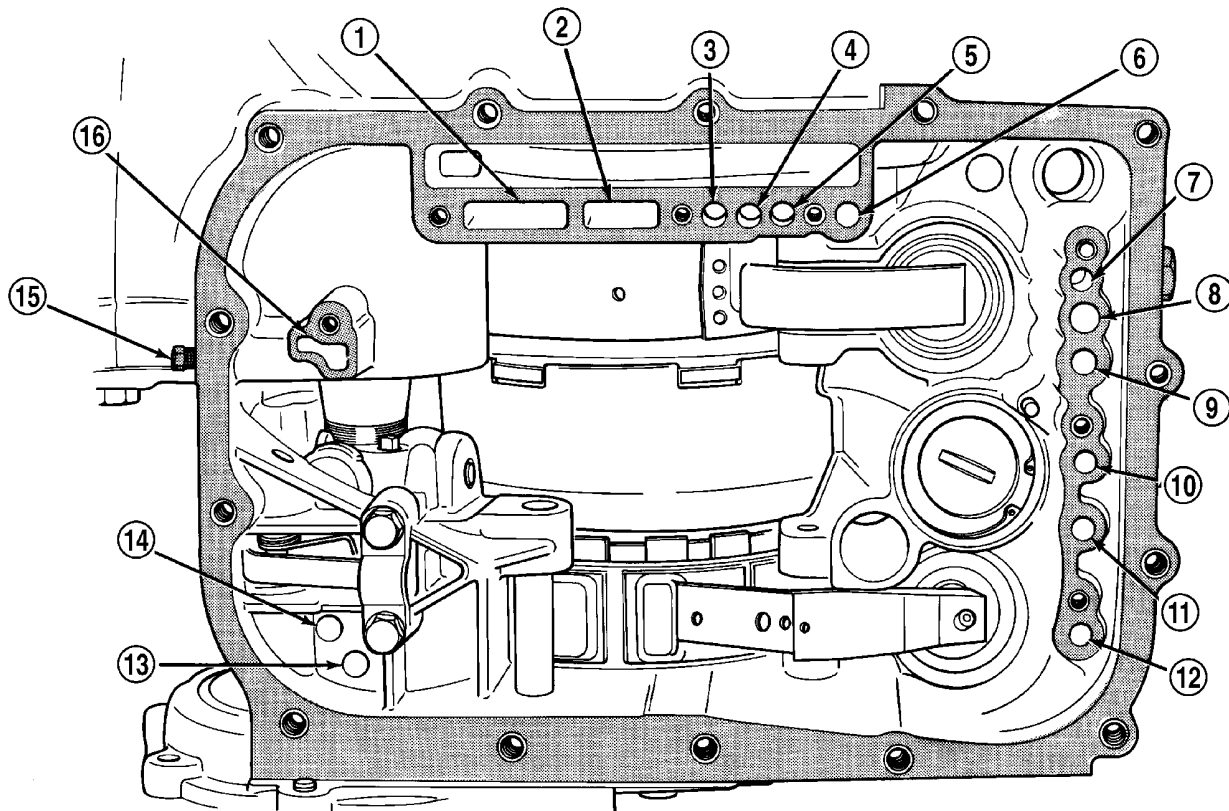
FRONT CLUTCH

Apply air pressure to front clutch apply passage and listen for a dull thud which indicates that front clutch is operating. Hold air pressure on for a few seconds and inspect system for excessive oil leaks.

REAR CLUTCH

Apply air pressure to rear clutch apply passage and listen for a dull thud which indicates that rear clutch is operating. Also inspect for excessive oil leaks. If a dull thud cannot be heard in the clutches, place finger tips on clutch housing and again apply air pressure. Movement of piston can be felt as the clutch is applied.

DIAGNOSIS AND TESTING (Continued)



PU142A

Fig. 5 Air Pressure Tests

- | | |
|---------------------------|--------------------------------|
| 1 - PUMP SUCTION | 9 - KICKDOWN SERVO ON |
| 2 - PUMP PRESSURE | 10 - ACCUMULATOR OFF |
| 3 - FRONT CLUTCH APPLY | 11 - ACCUMULATOR ON |
| 4 - REAR CLUTCH APPLY | 12 - LOW-REVERSE SERVO APPLY |
| 5 - TO TORQUE CONVERTER | 13 - GOVERNOR PRESSURE |
| 6 - FROM TORQUE CONVERTER | 14 - LINE PRESSURE TO GOVERNOR |
| 7 - TO OIL COOLER | 15 - GOVERNOR PRESSURE PLUG |
| 8 - KICKDOWN SERVO OFF | 16 - GOVERNOR PRESSURE |

KICKDOWN SERVO (FRONT)

Direct air pressure into KICKDOWN SERVO ON passage. Operation of servo is indicated by a tightening of front band. Spring tension on servo piston should release the band.

LOW AND REVERSE SERVO (REAR)

Direct air pressure into LOW-REVERSE SERVO APPLY passage. Operation of servo is indicated by a tightening of rear band. Spring tension on servo piston should release the band.

If clutches and servos operate properly, no upshift indicates that a malfunction exists in the valve body.

FLUID LEAKAGE-TORQUE CONVERTER HOUSING AREA

When diagnosing converter housing fluid leaks, three actions must be taken before repair:

- (1) Verify proper transmission fluid level.
- (2) Verify that the leak originates from the converter housing area and is transmission fluid.
- (3) Determine the true source of the leak.

Fluid leakage at or around the torque converter area may originate from an engine oil leak (Fig. 6). The area should be examined closely. Factory fill fluid is red and, therefore, can be distinguished from engine oil.

Some suspected converter housing fluid leaks may not be leaks at all. They may only be the result of residual fluid in the converter housing, or excess

DIAGNOSIS AND TESTING (Continued)

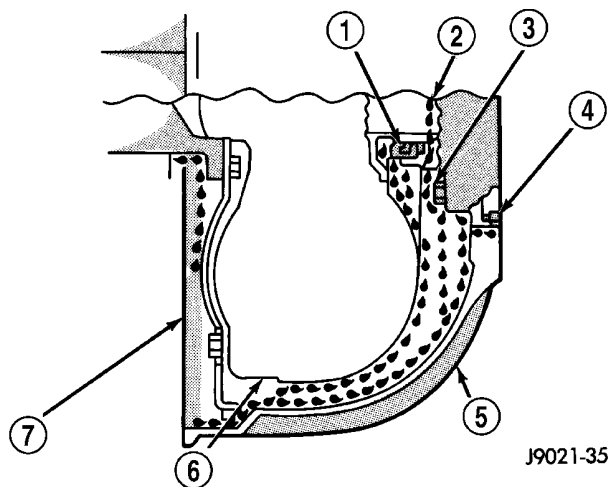


Fig. 6 Converter Housing Leak Paths

- 1 – PUMP SEAL
- 2 – PUMP VENT
- 3 – PUMP BOLT
- 4 – PUMP GASKET
- 5 – CONVERTER HOUSING
- 6 – CONVERTER
- 7 – REAR MAIN SEAL LEAK

fluid spilled during factory fill, or fill after repair. Converter housing leaks have several potential sources. Through careful observation, a leak source can be identified before removing the transmission for repair.

Pump seal leaks tend to move along the drive hub and onto the rear of the converter (Fig. 6). Pump o-ring or pump body leaks follow the same path as a seal leak. Pump attaching bolt leaks are generally deposited on the inside of the converter housing and not on the converter itself. Pump seal or gasket leaks usually travel down the inside of the converter housing (Fig. 6).

TORQUE CONVERTER LEAKAGE

Possible sources of torque converter leakage are:

- Torque converter weld leaks at the outside diameter weld (Fig. 7).
- Torque converter hub weld (Fig. 7).

SERVICE PROCEDURES

FLUID LEVEL AND CONDITION

NOTE: The transmission and differential sump have a common oil sump with a communicating opening between the two.

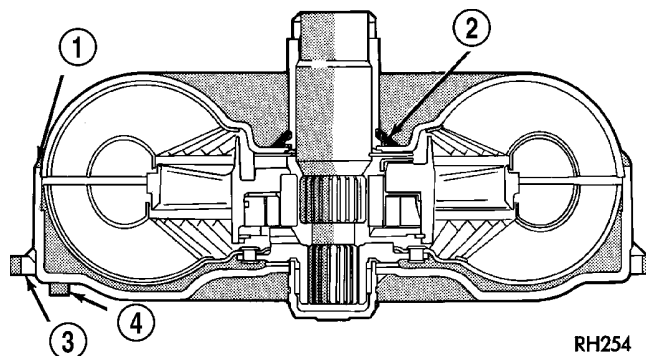


Fig. 7 Converter Leak Points—Typical

- 1 – OUTSIDE DIAMETER WELD
- 2 – TORQUE CONVERTER HUB WELD
- 3 – STARTER RING GEAR
- 4 – LUG

FLUID LEVEL CHECK

The torque converter fills in both the P Park and N Neutral positions. Place the selector lever in P Park to be sure that the fluid level check is accurate. The engine should be running at idle speed for at least one minute, with the vehicle on level ground. This will assure complete oil level stabilization between differential and transmission. The fluid should be at normal operating temperature (approximately 82 C. or 180 F.). The fluid level is correct if it is in the HOT region (cross-hatched area) on the fluid level indicator (Fig. 8).

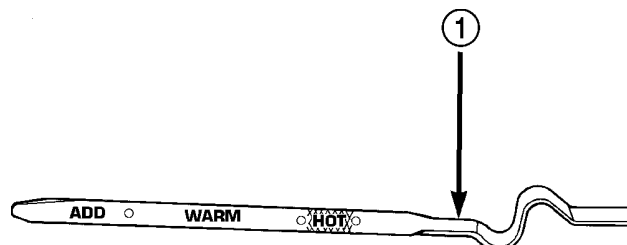


Fig. 8 Fluid Level Indicator Markings

- 1 – TRANSAXLE DIPSTICK

Low fluid level can cause a variety of conditions because it allows the pump to take in air along with the fluid. As in any hydraulic system, air bubbles make the fluid spongy, therefore, pressures will be low and build up slowly.

Improper filling can also raise the fluid level too high. When the transaxle has too much fluid, the

SERVICE PROCEDURES (Continued)

gears churn up foam and cause the same conditions which occur with a low fluid level.

In either case, the air bubbles can cause overheating, fluid oxidation, and varnishing. This can interfere with normal valve, clutch, and servo operation. Foaming can also result in fluid escaping from the transaxle dipstick where it may be mistaken for a leak.

Along with fluid level, it is important to check the condition of the fluid. When the fluid smells burned, and is contaminated with metal or friction material particles, a complete transaxle overhaul is needed. Be sure to examine the fluid on the dipstick closely. If there is any doubt about its condition, drain out a sample for a double check.

FLUID CONDITION

Along with fluid level, it is important to check the condition of the fluid. When the fluid smells burned, and is contaminated with metal or friction material particles, a complete transaxle recondition is needed. Be sure to examine the fluid on the dipstick closely. If there is any doubt about its condition, drain out a sample for a double check.

Mopar® ATF+3 (Automatic Transmission Fluid-Type 7176) when new is red in color. The ATF is dyed red so it can be identified from other fluids used in the vehicle such as engine oil or antifreeze. The red color is not permanent and is not an indicator of fluid condition. As the vehicle is driven, the ATF will begin to look darker in color and may eventually become brown. This is normal. A dark brown/black fluid accompanied with a burnt odor and/or deterioration in shift quality may indicate fluid deterioration or transmission component failure.

After the fluid has been checked, seat the dipstick fully to seal out water and dirt.

TRANSAXLE FLUID AND FILTER SERVICE

NOTE: Refer to the maintenance schedules in Group 0, Lubrication and Maintenance, or the vehicle owner's manual, for the recommended maintenance (fluid/filter change) intervals for this transaxle.

NOTE: Only fluids of the type labeled Mopar® ATF+3 (Automatic Transmission Fluid) Type 7176 should be used. A filter change should be made at the time of the transmission oil change. The magnet (on the inside of the oil pan) should also be cleaned with a clean, dry cloth.

NOTE: If the transaxle is disassembled for any reason, the fluid and filter should be changed.

FLUID/FILTER SERVICE

(1) Raise vehicle on a hoist (See Lubrication, Group 0). Place a drain container with a large opening, under transaxle oil pan.

(2) Loosen pan bolts and tap the pan at one corner to break it loose allowing fluid to drain, then remove the oil pan.

(3) Remove oil filter-to-valve body screws (Fig. 9).

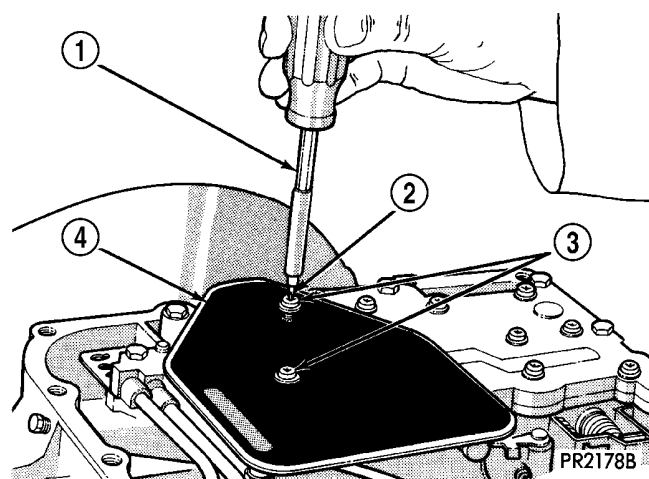


Fig. 9 Oil Filter Screws

- 1 - SCREWDRIVER HANDLE
- 2 - SPECIAL TOOL L-4553
- 3 - OIL FILTER SCREWS (2)
- 4 - OIL FILTER

(4) Remove oil filter and gasket (Fig. 10).

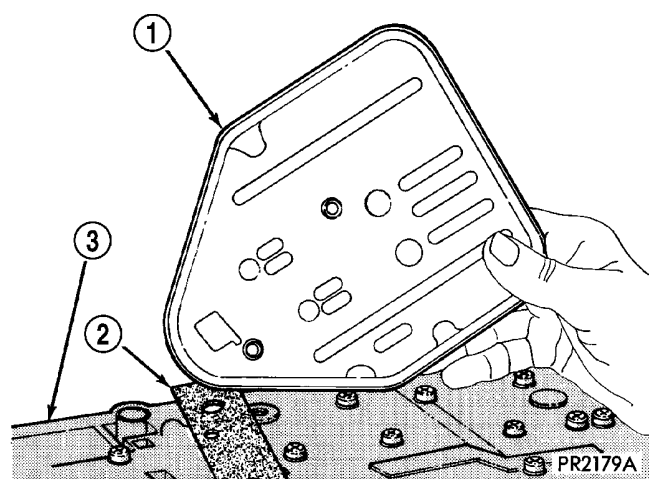


Fig. 10 Oil Filter and Gasket

- 1 - OIL FILTER
- 2 - GASKET
- 3 - VALVE BODY

(5) Install a new filter and gasket (Fig. 10).

SERVICE PROCEDURES (Continued)

(6) Clean the oil pan and magnet. Reinstall pan using new Mopar Silicone Adhesive sealant. Tighten oil pan bolts to 19 N·m (165 in. lbs.).

(7) Pour four quarts of Mopar® ATF+3 (Automatic Transmission Fluid) Type 7176 through the dipstick opening.

(8) Start engine and allow to idle for at least one minute. Then, with parking and service brakes applied, move selector lever momentarily to each position, ending in the park or neutral position.

(9) Check the transaxle fluid level and add an appropriate amount to bring the transaxle fluid level to 3mm (1/8 in.) below the "ADD" mark on the dipstick (Fig. 11).

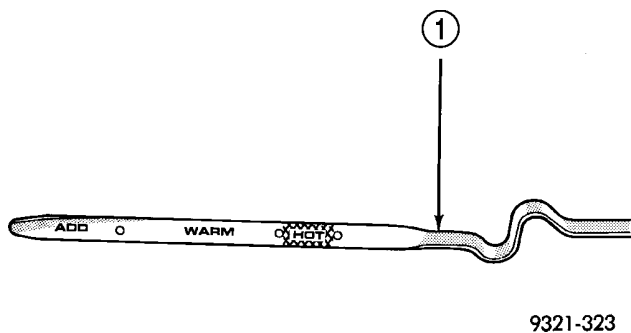


Fig. 11 Dipstick Markings

1 – TRANSAXLE DIPSTICK

(10) Recheck the fluid level after the transaxle has reached normal operating temperature (180°F.). Refer to Fluid Level and Condition Check in this group for the proper fluid fill procedure.

(11) To prevent dirt from entering transaxle, make certain that dipstick is fully seated into the dipstick opening.

ALUMINUM THREAD REPAIR

Damaged or worn threads in the aluminum transaxle case and valve body can be repaired by the use of Heli-Coils, or equivalent. This repair consists of drilling out the worn-out damaged threads. Then tapping the hole with a Heli-Coil tap, or equivalent, and installing a Heli-Coil insert, or equivalent, into the hole. This brings the hole back to its original thread size.

Heli-Coil, or equivalent, tools and inserts are readily available from most automotive parts suppliers.

FLUSHING COOLERS AND TUBES

When a transaxle failure has contaminated the fluid, the oil cooler(s) must be flushed. The cooler bypass valve in the transaxle must be replaced also. The torque converter must also be replaced with an exchange unit. This will insure that metal particles

or sludged oil are not later transferred back into the reconditioned (or replaced) transaxle.

The recommended procedure for cooler flushing is to use Tool 6906 Cooler Flusher.

WARNING: WEAR PROTECTIVE EYEWEAR THAT MEETS THE REQUIREMENTS OF OSHA AND ANSI Z87.1-1968. WEAR STANDARD INDUSTRIAL RUBBER GLOVES.

KEEP LIGHTED CIGARETTES, SPARKS, FLAMES, AND OTHER IGNITION SOURCES AWAY FROM THE AREA TO PREVENT THE IGNITION OF COMBUSTIBLE LIQUIDS AND GASES. KEEP A CLASS (B) FIRE EXTINGUISHER IN THE AREA WHERE THE FLUSHER WILL BE USED.

KEEP THE AREA WELL VENTILATED.

DO NOT LET FLUSHING SOLVENT COME IN CONTACT WITH YOUR EYES OR SKIN: IF EYE CONTAMINATION OCCURS, FLUSH EYES WITH WATER FOR 15 TO 20 SECONDS. REMOVE CONTAMINATED CLOTHING AND WASH AFFECTED SKIN WITH SOAP AND WATER. SEEK MEDICAL ATTENTION.

(1) Remove cover plate filler plug on Tool 6906. Fill reservoir 1/2 to 3/4 full of fresh flushing solution. Flushing solvents are petroleum based solutions generally used to clean automatic transmission components. **DO NOT** use solvents containing acids, water, gasoline, or any other corrosive liquids.

(2) Reinstall filler plug on Tool 6906.

(3) Verify pump power switch is turned OFF. Connect red alligator clip to positive (+) battery post. Connect black (-) alligator clip to a good ground.

NOTE: When flushing transmission cooler and lines, ALWAYS reverse flush.

(4) Connect the BLUE pressure line to the OUTLET (From) cooler line.

(5) Connect the CLEAR return line to the INLET (To) cooler line

(6) Turn pump ON for two to three minutes to flush cooler and lines.

(7) Turn pump OFF.

(8) Disconnect CLEAR suction line from reservoir at cover plate. Disconnect CLEAR return line at cover plate, and place it in a drain pan.

(9) Turn pump ON for 30 seconds to purge flushing solution from cooler and lines. Turn pump OFF.

(10) Place CLEAR suction line into a one quart container of Mopar® ATF+3 (Automatic Transmission Fluid—Type 7176).

(11) Turn pump ON until all transmission fluid is removed from the one quart container and lines. This purges any residual cleaning solvent from the transmission cooler and lines. Turn pump OFF.

SERVICE PROCEDURES (Continued)

(12) Disconnect alligator clips from battery. Reconnect flusher lines to cover plate, and remove flushing adapters from cooler lines.

OIL PUMP VOLUME CHECK

Measuring oil pump output volume will determine if sufficient flow to the transmission oil cooler exists, and whether or not an internal transmission failure is present.

Verify that transmission fluid is at the proper level. Refer to Fluid Level and Condition in this Group. If adding fluid is necessary, fill to the proper level with Mopar® ATF+3 (Automatic Transmission Fluid-Type 7176). The following procedure is to check oil pump output volume:

(1) Disconnect the To cooler line at the oil cooler inlet and place a collecting container under the disconnected line.

CAUTION: With the fluid set at the proper level, fluid collection should not exceed (1) quart or internal damage to the transmission may occur.

(2) Start engine and run at curb idle speed, with the shift selector in neutral.

(3) If one quart of ATF is collected in 20 seconds or less, flow is within acceptable limits. If fluid flow is intermittent or it takes more than 20 seconds to collect one quart of ATF, refer to Hydraulic Pressure Tests in this Group.

(4) Inspect the cooler hose for damage. Replace if necessary.

(5) Connect the To cooler hose to the oil cooler inlet and torque clamp to 2 N·m (20 in. lbs.) torque.

(6) Refill the transaxle to proper level with Mopar® ATF+3 (Automatic Transmission Fluid-Type 7176).

REMOVAL AND INSTALLATION

VEHICLE SPEED SENSOR PINION GEAR

When the sensor is removed for any reason, a NEW O-ring must be installed on its outside diameter.

REMOVAL

(1) Remove harness connector from sensor. Make sure weatherseal stays on harness connector.

(2) Remove bolt securing the sensor in the extension housing.

(3) Carefully pull sensor and pinion gear assembly out of extension housing.

(4) Remove pinion gear from sensor.

INSTALLATION

(1) To install, reverse the above procedure. Make sure extension housing and sensor flange are clean prior to installation. Always use a NEW sensor O-ring.

(2) Tighten bolt to 7 N·m (60 in. lbs.). Tighten speedometer cable to 4 N·m (35 in. lbs.).

PARK/NEUTRAL STARTING AND BACK-UP LAMP SWITCH

TEST

The park/neutral starting switch is the center terminal of the 3 terminal switch. It provides ground for the starter solenoid circuit through the selector lever in only Park and Neutral positions.

(1) To test switch, remove wiring connector from switch and test for continuity between center pin of switch and transaxle case. Continuity should exist only when transaxle is in Park or Neutral.

(2) Check gearshift cable adjustment before replacing a switch which tests bad.

REMOVAL

(1) Unscrew switch from transaxle case allowing fluid to drain into a container. Move selector lever to Park, then to Neutral position, and inspect to see the switch operating lever fingers are centered in switch opening.

INSTALLATION

(1) Screw the switch with a new seal into transaxle case and tighten to 33 N·m (24 ft. lbs.). Retest switch with the test lamp.

(2) Add fluid to transaxle to bring up to proper level.

(3) The back-up lamp switch circuit is through the two outside terminals of the 3 terminal switch.

(4) To test switch, remove wiring connector from switch and test for continuity between the two outside pins.

(5) Continuity should exist only with transaxle in Reverse position.

(6) No continuity should exist from either pin to the case.

TRANSAXLE AND TORQUE CONVERTER REMOVAL

NOTE: Transaxle removal does NOT require engine removal.

The transaxle and torque converter must be removed as an assembly; otherwise, the torque converter drive plate, pump bushing, or oil seal may be damaged. The drive plate will not support a load;

REMOVAL AND INSTALLATION (Continued)

therefore, none of the weight of the transaxle should be allowed to rest on the plate during removal.

REMOVAL

- (1) Disconnect negative battery cable.
- (2) Remove air cleaner and hoses.
- (3) Disconnect throttle linkage and shift linkage from transaxle.
- (4) Unplug torque converter clutch connector, located near the dipstick. Unplug the gear position switch.
- (5) Remove transaxle dipstick tube.
- (6) Remove the transaxle cooler lines and plug.
- (7) Install engine support fixture (Fig. 12).

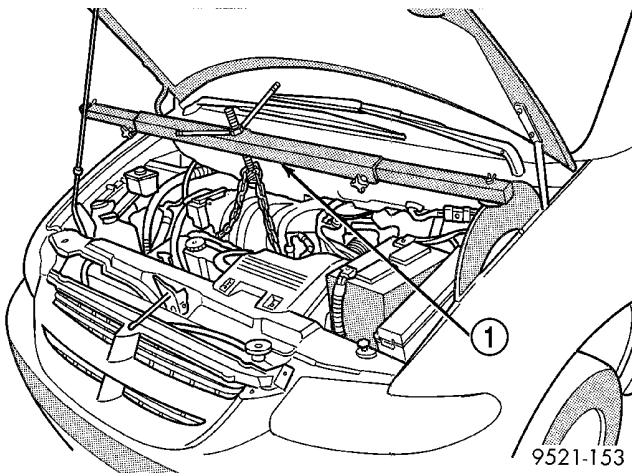


Fig. 12 Engine Support Fixture

1 – ENGINE FIXTURE

- (8) Remove bell housing upper bolts.
- (9) Raise vehicle. Remove front wheels. Refer to Group 2, Suspension to remove or install wheel hub nut and both drive shafts.

CAUTION: The exhaust flex joint must be disconnected from the exhaust manifold anytime the engine is lowered. If the engine is lowered while the flex pipe is attached, damage will occur.

(10) Remove bolts securing exhaust flex joint to exhaust manifold. Disconnect exhaust pipe from manifold.

(11) Remove torque converter dust cover. Mark torque converter and drive plate with chalk, for reassembly. Rotate engine clockwise and remove torque converter mounting bolts.

(12) Remove engine mount bracket from front crossmember.

(13) Remove front mount insulator through-bolt and bellhousing bolts.

(14) Position transaxle jack (Fig. 13).

(15) Remove rear engine mount shield.

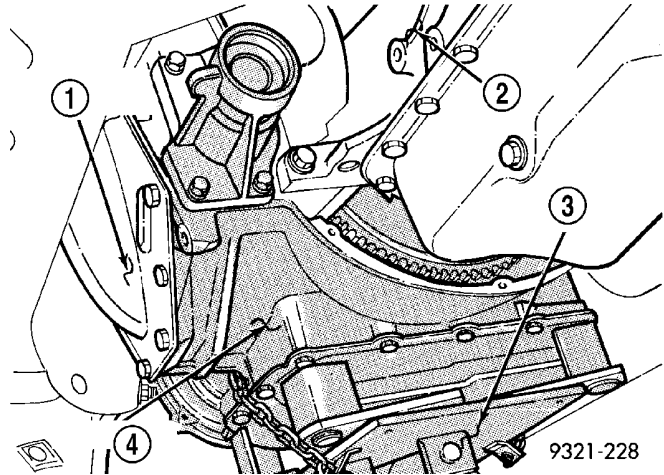


Fig. 13 Transaxle Jack

- 1 – DIFFERENTIAL COVER
- 2 – ENGINE
- 3 – TRANSMISSION JACK
- 4 – TRANSAXLE

(16) Remove rear engine mount bracket bolts and bracket.

(17) Remove left engine mount thru-bolt.

(18) Remove left engine mount from transaxle.

(19) Remove starter. Remove lower bell housing bolts.

(20) Carefully work transaxle and torque converter assembly rearward off engine block dowels and disengage converter hub from end of crankshaft. Attach a small C clamp to edge of bell housing. This will hold torque converter in place during transaxle removal. Lower transaxle and remove assembly from under the vehicle.

(21) To remove torque converter assembly, remove C-clamp from edge of bellhousing and slide converter out of transaxle.

INSTALLATION

(1) When installing transaxle, reverse the above procedure.

(2) If torque converter was removed from transaxle be sure to align pump inner gear pilot flats with torque converter impeller hub flats.

(3) Adjust gearshift and throttle cables.

(4) Refill transaxle with Mopar ATF+3 (Automatic Transmission Fluid—Type 7176).

FRONT PUMP OIL SEAL

The pump oil seal can be replaced without removing the pump and reaction shaft support assembly from the transaxle case.

REMOVAL AND INSTALLATION (Continued)

REMOVAL

(1) Screw seal remover Tool C-3981-B into seal (Fig. 14), then tighten screw portion of tool to withdraw the seal.

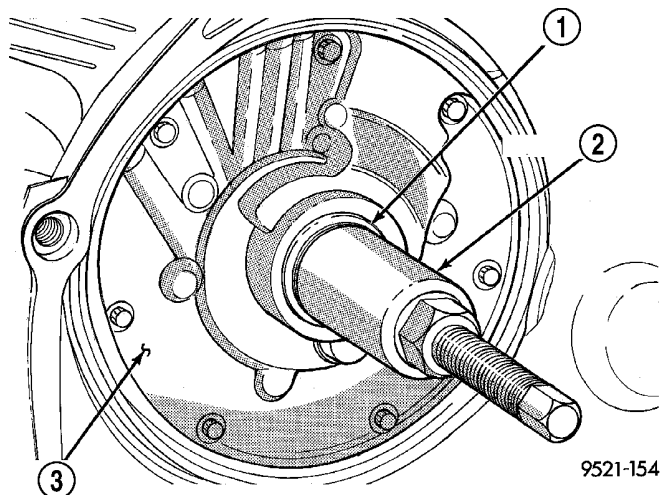


Fig. 14 Remove Pump Oil Seal

- 1 - PUMP OIL SEAL
- 2 - OIL SEAL REMOVER TOOL C-3981-B
- 3 - OIL PUMP

INSTALLATION

(1) To install a new seal, place seal in opening of the pump housing (lip side facing inward). Using Tool C-4193 and Handle Tool C-4171, drive new seal into housing until tool bottoms (Fig. 15).

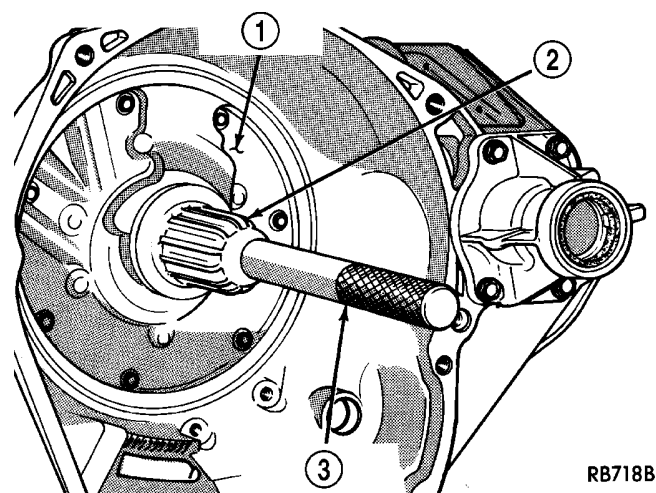


Fig. 15 Install Pump Oil Seal

- 1 - OIL PUMP
- 2 - OIL SEAL INSTALLER TOOL C-4193
- 3 - SPECIAL TOOL HANDLE C-4171

DISASSEMBLY AND ASSEMBLY
TRANSAXLE

DISASSEMBLY

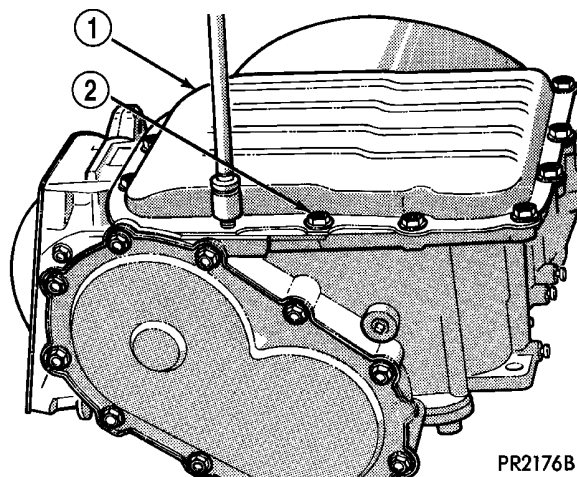


Fig. 16 Transaxle Oil Pan Bolts

- 1 - TRANSAXLE OIL PAN
- 2 - OIL PAN BOLTS

Remove all old sealant before applying new sealant.

Use only Mopar® Silicone Rubber Sealant or equivalent when installing oil pan.

Put sealant on the oil pan flange (Fig. 17) and on all oil pan bolts (underside of bolt head).

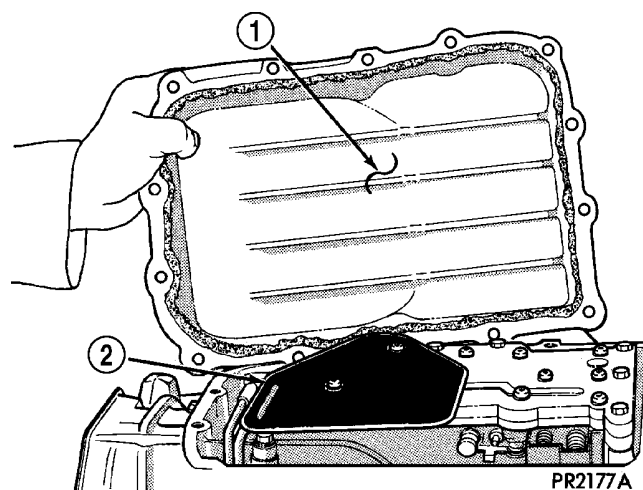


Fig. 17 Transaxle Oil Pan

- 1 - TRANSAXLE OIL PAN
- 2 - OIL FILTER

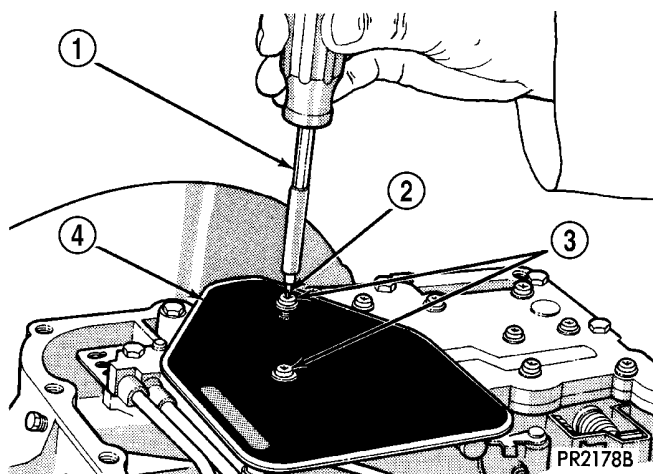


Fig. 18 Oil Filter Screws

- 1 - SCREWDRIVER HANDLE
- 2 - SPECIAL TOOL L-4553
- 3 - OIL FILTER SCREWS (2)
- 4 - OIL FILTER

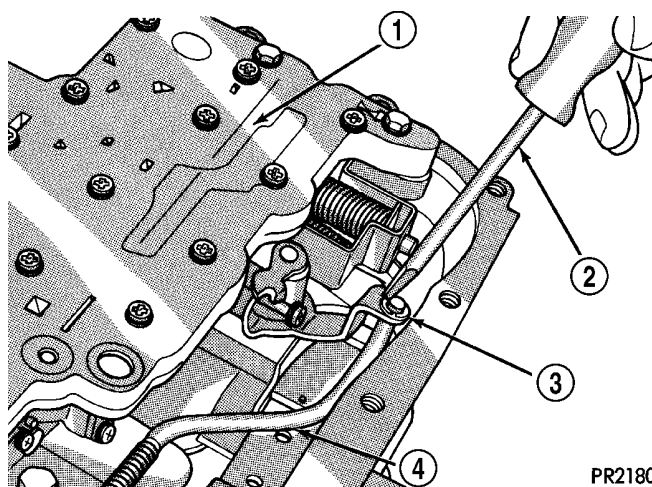


Fig. 20 Remove Parking Rod E-Clip

- 1 - VALVE BODY
- 2 - SCREWDRIVER
- 3 - "E" CLIP
- 4 - PARKING ROD

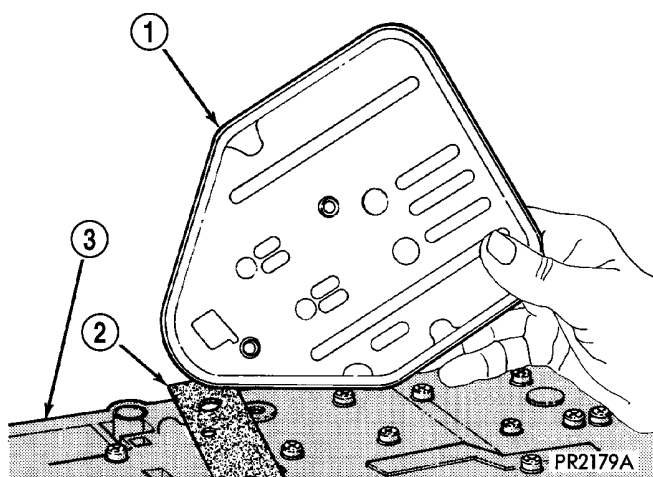


Fig. 19 Oil Filter

- 1 - OIL FILTER
- 2 - GASKET
- 3 - VALVE BODY

Remove neutral starting and back-up lamp switch.

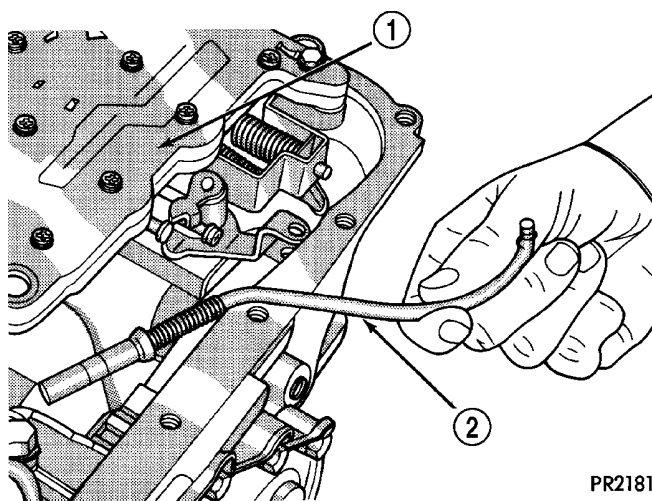
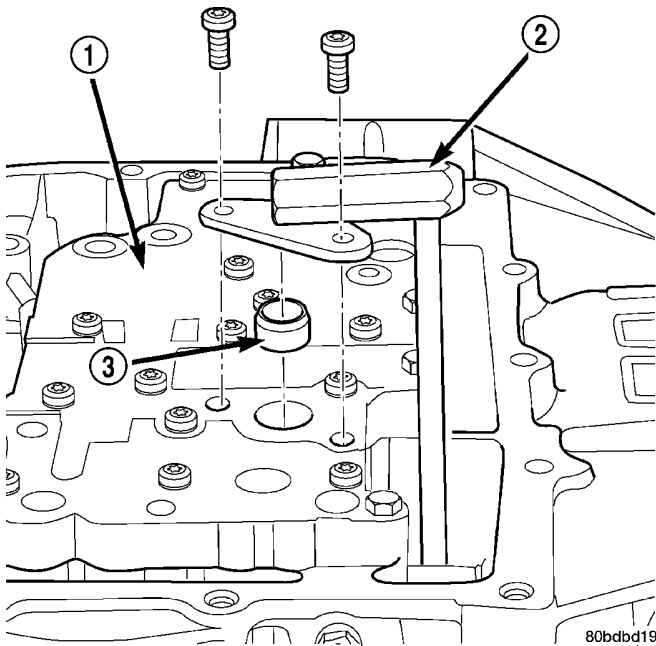


Fig. 21 Parking Rod

- 1 - VALVE BODY
- 2 - PARKING ROD

Measuring input shaft end play before disassembly will usually indicate if a thrust washer change is required (Fig. 24). The #3 thrust washer is located between input and output shafts.



Cooler Bypass Valve and Seal—If Equipped

- 1 - TRANSFER PLATE
- 2 - BYPASS VALVE
- 3 - SEAL

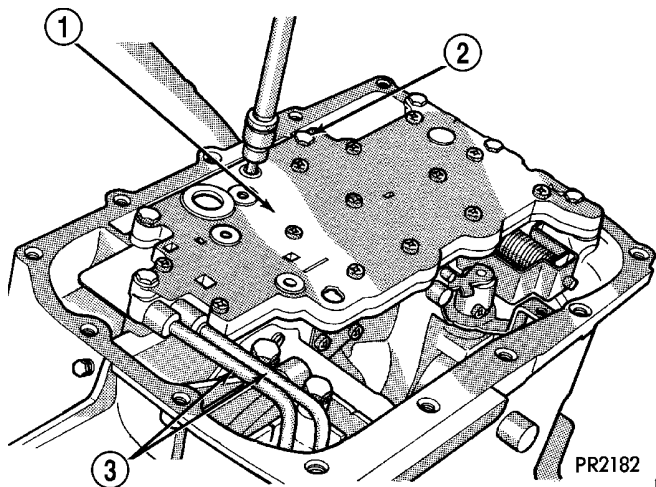


Fig. 22 Valve Body Attaching Bolts

- 1 - VALVE BODY
- 2 - VALVE BODY ATTACHING BOLTS (7)
- 3 - GOVERNOR TUBES

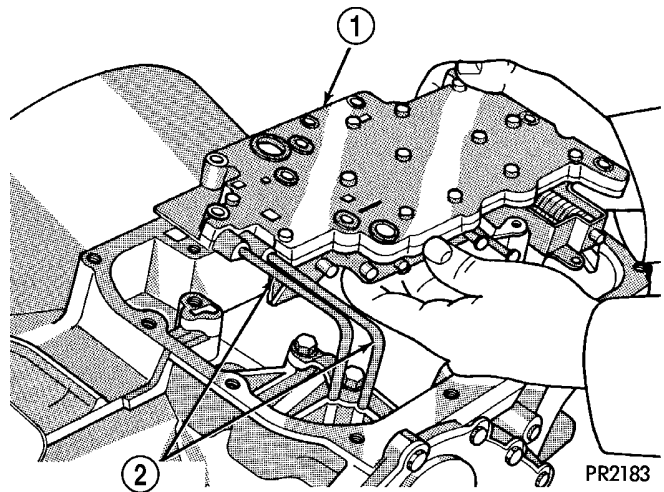


Fig. 23 Valve Body and Governor Tubes

- 1 - VALVE BODY ASSEMBLY
- 2 - GOVERNOR TUBES

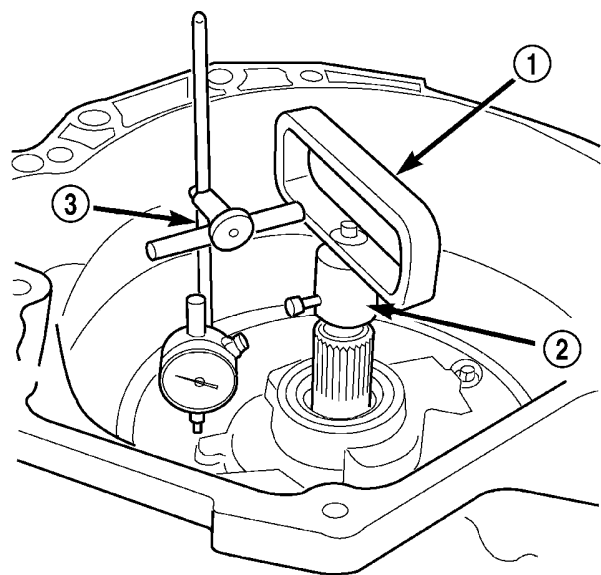


Fig. 24 Measure Input Shaft End Play using End Play Set 8266

- 1 - TOOL 8266-8
- 2 - TOOL 8266-2
- 3 - TOOL C-3339

DISASSEMBLY AND ASSEMBLY (Continued)

Move input shaft in and out to obtain end play reading. End play specifications are 0.19 to 1.50 mm (0.008 to 0.060 inch).

Record indicator reading for reference when reassembling the transaxle.

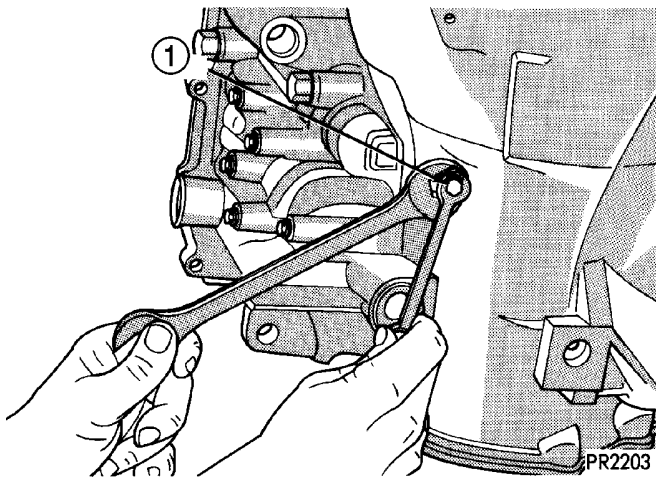


Fig. 25 Loosen Lock Nut and Tighten Kickdown Band Adjusting Screw

1 - KICKDOWN BAND ADJUSTING SCREW

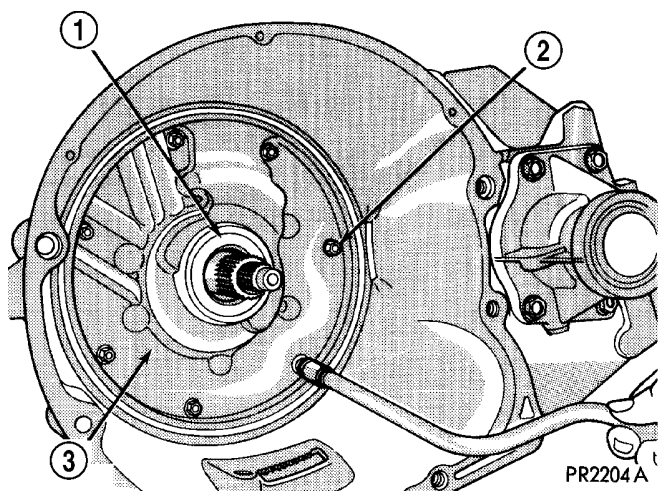


Fig. 26 Pump Attaching Bolts

1 - SEAL
2 - PUMP ATTACHING BOLTS (7)
3 - PUMP HOUSING

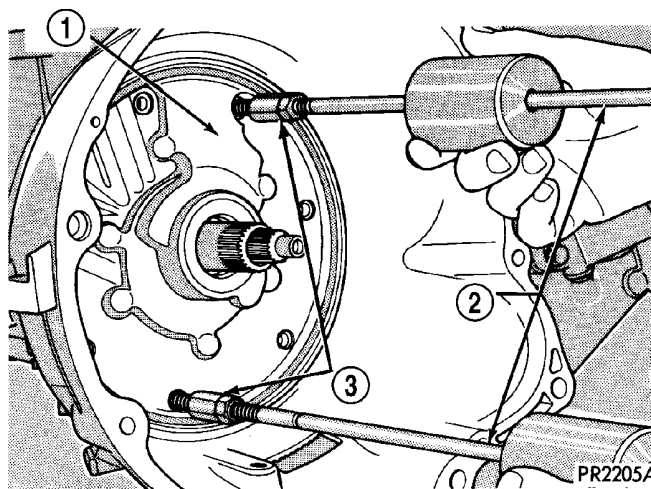


Fig. 27 Install Tool C-3752 with Adapters L-4437

1 - PUMP
2 - PULLERS TOOL C-3752
3 - ADAPTERS TOOL L-4437

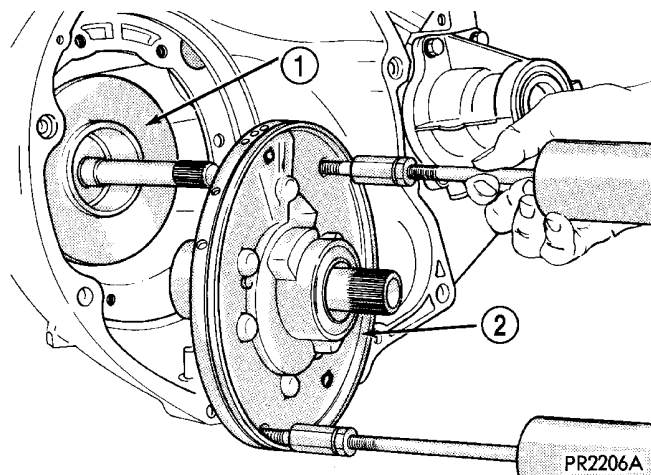


Fig. 28 Oil Pump with No. 1 Thrust Washer

1 - FRONT CLUTCH
2 - OIL PUMP ASSEMBLY

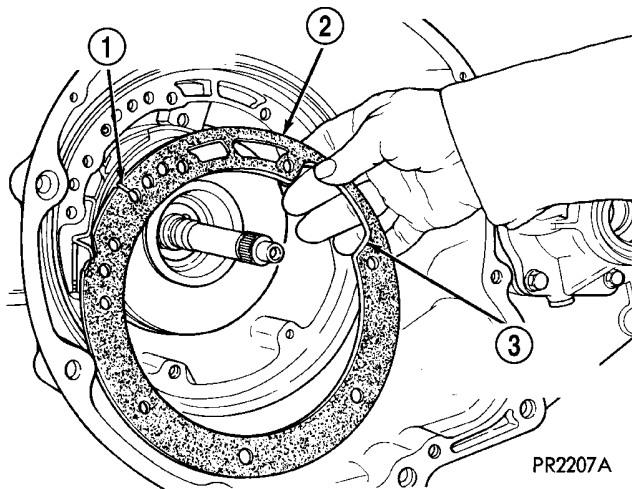


Fig. 29 Oil Pump Gasket

- 1 - SPLIT IN GASKET (DIFFERENTIAL OIL FEED)
- 2 - PUMP GASKET
- 3 - PUMP GASKET DIFFERENTIAL OIL FEED CUTOUT

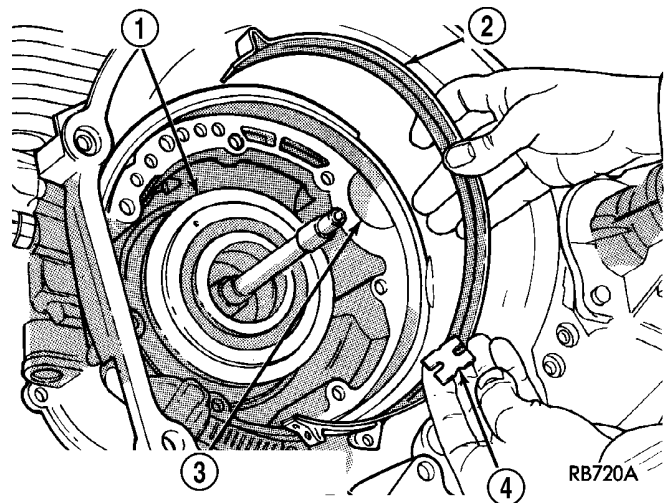


Fig. 31 Kickdown Band and Strut

- 1 - FRONT CLUTCH
- 2 - KICKDOWN BAND
- 3 - OIL RETURN AND FEED HOLE TO DIFFERENTIAL
- 4 - STRUT

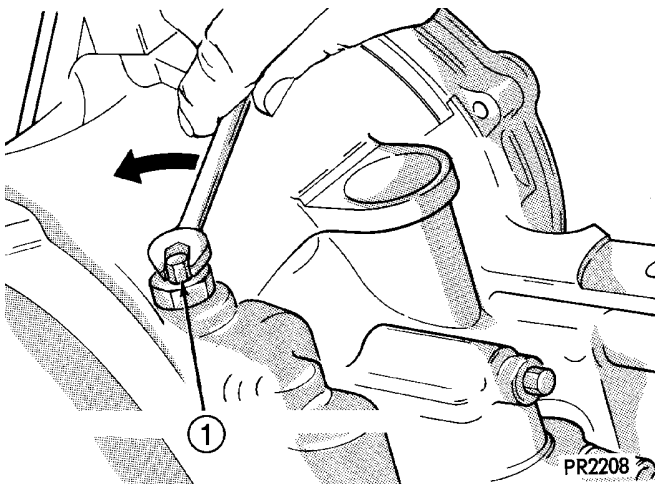


Fig. 30 Loosen Kickdown Band Adjusting Screw

- 1 - KICKDOWN BAND ADJUSTING SCREW

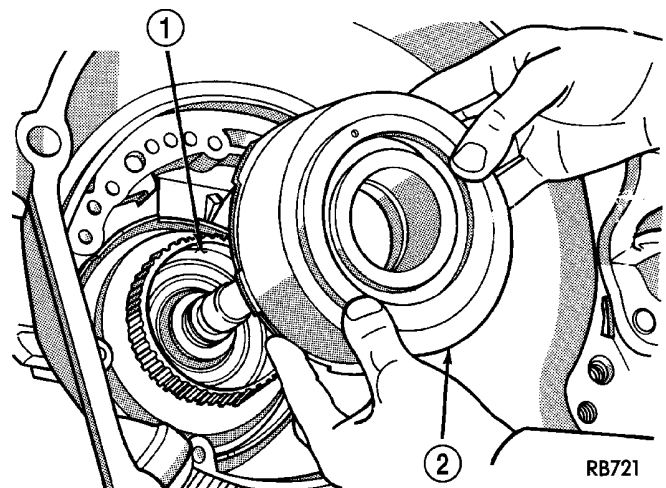


Fig. 32 Front Clutch Assembly

- 1 - REAR CLUTCH ASSEMBLY
- 2 - FRONT CLUTCH ASSEMBLY

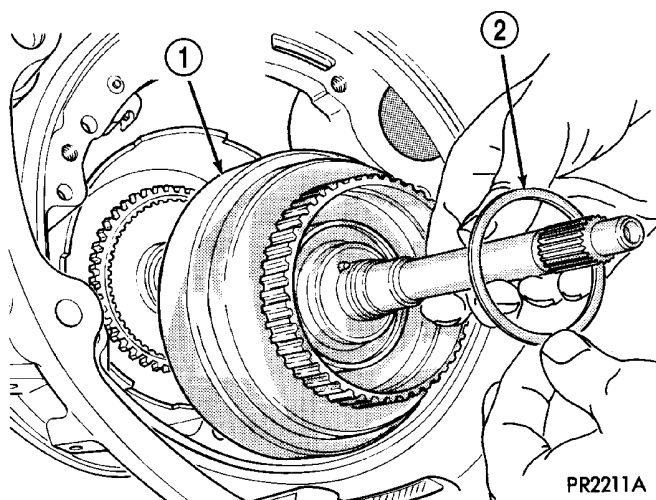


Fig. 33 No. 2 Thrust Washer and Rear Clutch

- 1 - REAR CLUTCH ASSEMBLY
- 2 - #2 THRUST WASHER

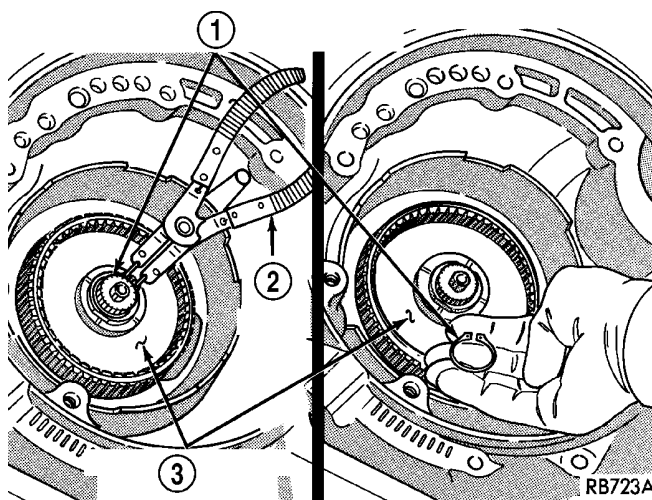


Fig. 35 Front Planetary Gear Snap Ring

- 1 - FRONT PLANETARY GEAR SNAP RING
- 2 - SNAP RING PLIERS
- 3 - FRONT PLANETARY GEAR ASSEMBLY

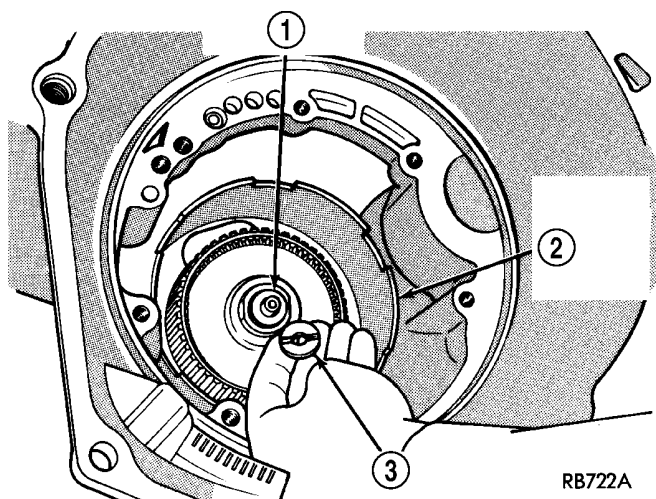


Fig. 34 No. 3 Thrust Washer

- 1 - OUTPUT SHAFT
- 2 - SUN GEAR DRIVING SHELL
- 3 - #3 THRUST WASHER (SELECT FIT)

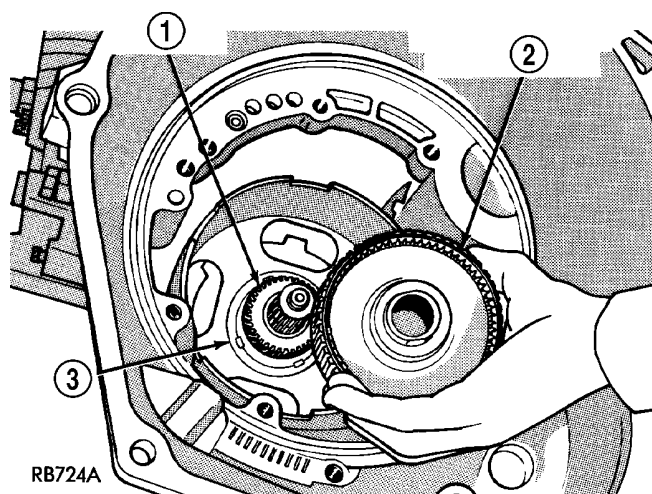
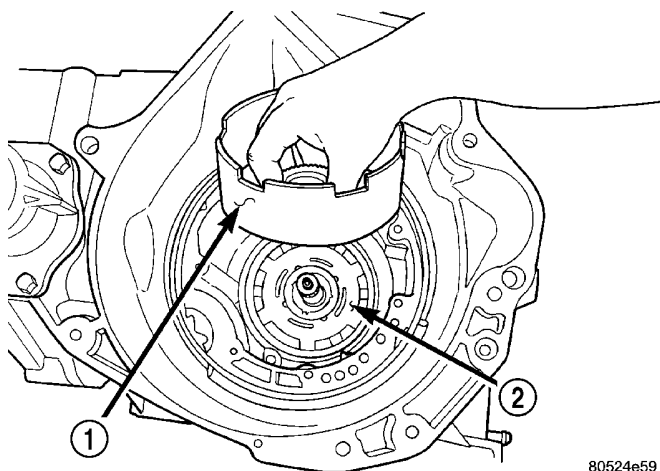


Fig. 36 Front Planetary Gear Assembly

- 1 - SUN GEAR
- 2 - FRONT PLANETARY GEAR ASSEMBLY
- 3 - #6 THRUST WASHER

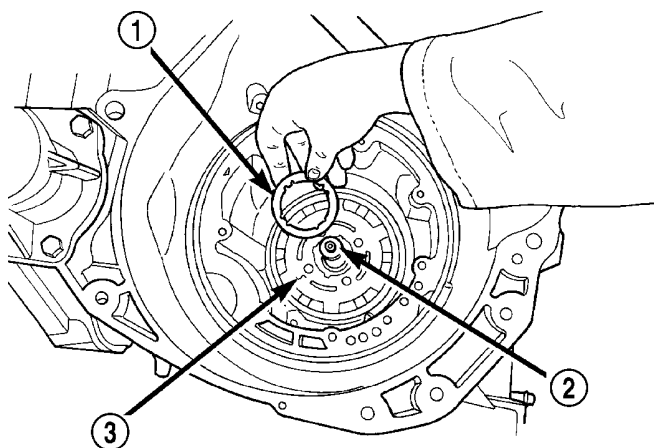
Remove Number 6 thrust washer from sun gear driving shell.



80524e59

Fig. 37 Sun Gear Driving Shell

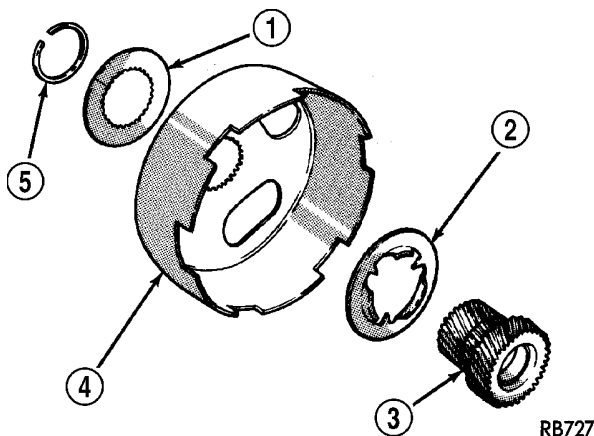
- 1 - SUN GEAR DRIVING SHELL
- 2 - REAR PLANETARY GEAR



80524e5a

Fig. 39 No. 9 Thrust Washer

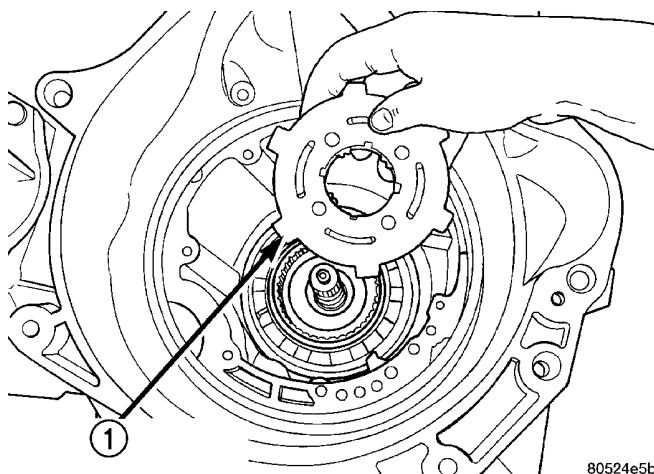
- 1 - #9 THRUST WASHER
- 2 - OUTPUT SHAFT
- 3 - REAR PLANETARY GEAR ASSEMBLY



RB727

Fig. 38 Sun Gear Driving Shell Components

- 1 - #8 THRUST WASHER (STEEL)
- 2 - #7 SPACER (STEEL)
- 3 - SUN GEAR
- 4 - SUN GEAR DRIVING SHELL
- 5 - SNAP RING



80524e5b

Fig. 40 Rear Planetary Gear Assembly

- 1 - REAR PLANETARY GEAR ASSEMBLY

DISASSEMBLY AND ASSEMBLY (Continued)

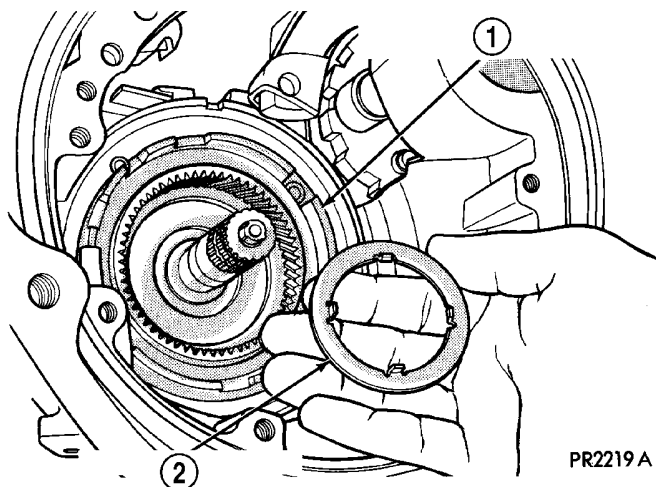


Fig. 41 No. 10 Thrust Washer

- 1 - OVERRUNNING CLUTCH CAM ASSEMBLY
- 2 - #10 THRUST WASHER

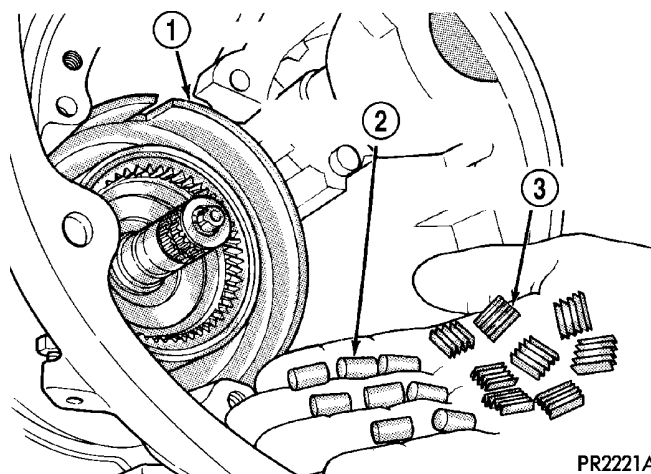


Fig. 43 Overrunning Clutch Rollers and Spring

- 1 - LOW-REVERSE BAND
- 2 - OVERRUNNING CLUTCH ROLLERS (8)
- 3 - OVERRUNNING CLUTCH SPRINGS (8)

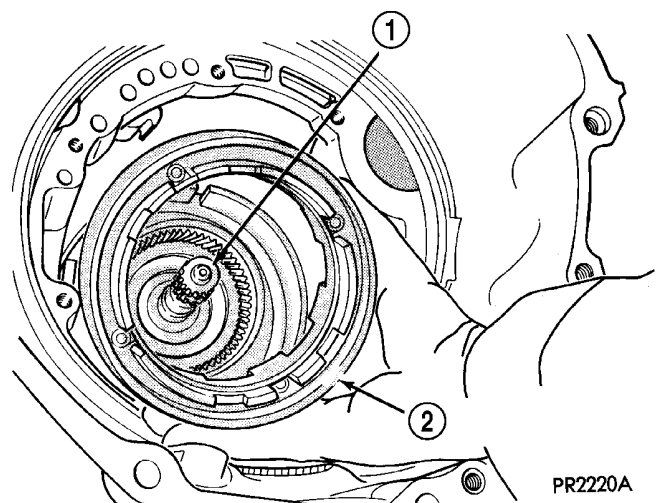


Fig. 42 Overrunning Clutch Cam Assembly

- 1 - OUTPUT SHAFT
- 2 - OVERRUNNING CLUTCH CAM ASSEMBLY

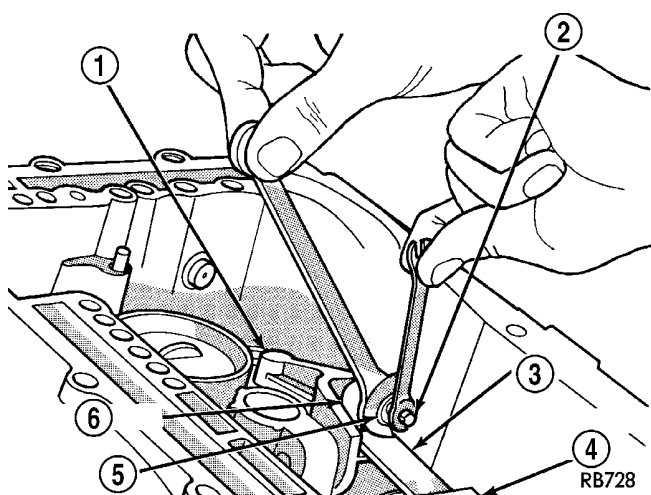


Fig. 44 Loosen or Adjust Low/Reverse Band

- 1 - LOW-REVERSE BAND LEVER
- 2 - ADJUSTING SCREW
- 3 - STRUT
- 4 - LOW-REVERSE BAND
- 5 - LOCK NUT
- 6 - LEVER (SHORT)

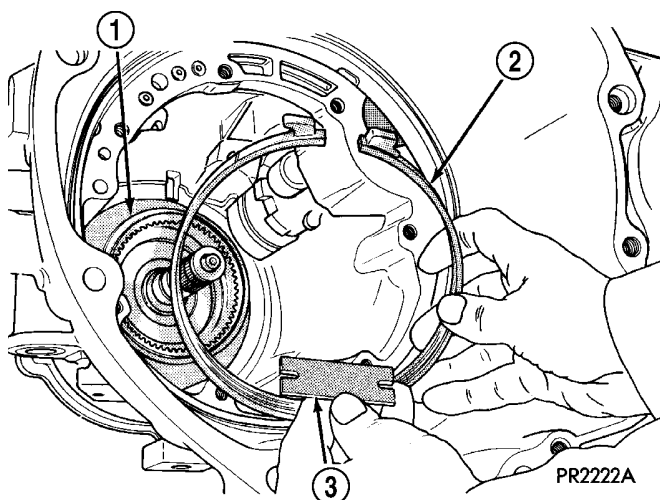


Fig. 45 Low/Reverse Band and Strut

- 1 - #11 THRUST WASHER
- 2 - LOW-REVERSE BAND
- 3 - STRUT

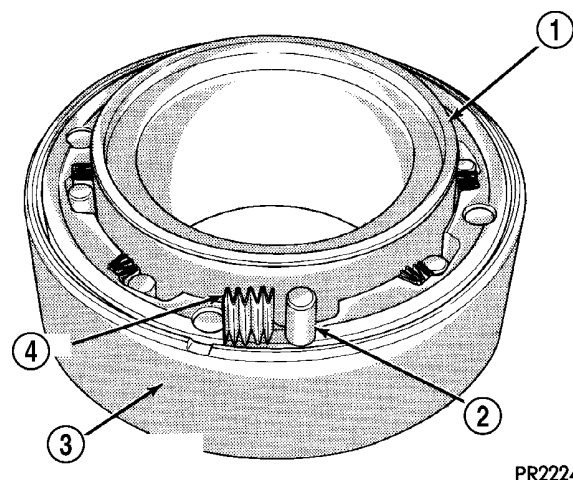


Fig. 47 Install Overrunning Clutch Rollers and Springs

- 1 - TOOL L-4440
- 2 - ROLLER (8)
- 3 - OVERRUNNING CLUTCH CAM ASSEMBLY
- 4 - SPRING (8)

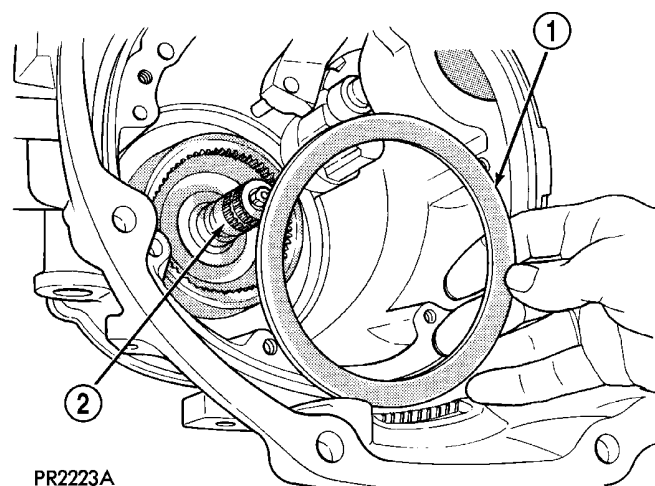


Fig. 46 No. 11 Thrust Washer

- 1 - #11 THRUST WASHER
- 2 - OUTPUT SHAFT

removing or installing valves or plugs, slide them in or out carefully. Do not use force.

NOTE: TAG ALL SPRINGS AS THEY ARE REMOVED FOR REASSEMBLY IDENTIFICATION.

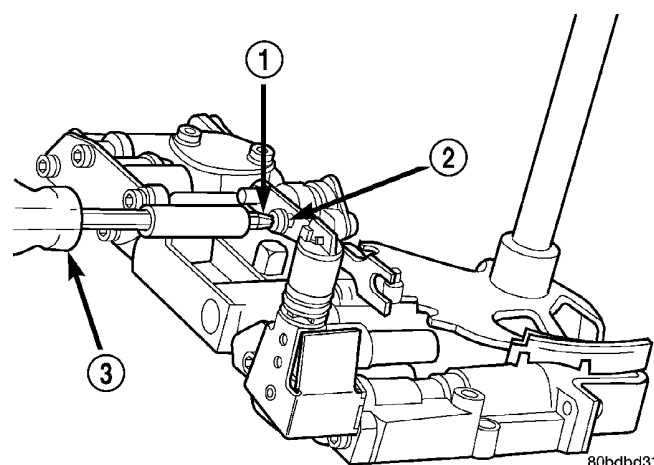


Fig. 48 Detent Spring Attaching Screw and Spring

- 1 - SPECIAL TOOL L-4553
- 2 - DETENT SPRING SCREW
- 3 - SCREWDRIVER HANDLE

ASSEMBLY

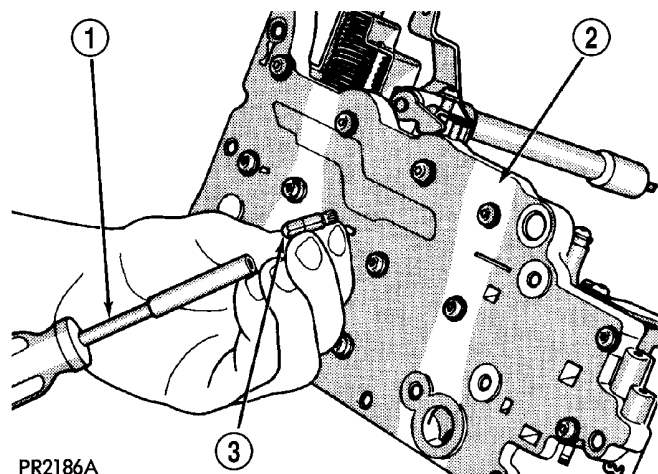
When rebuilding, reverse the above procedure.

VALVE BODY

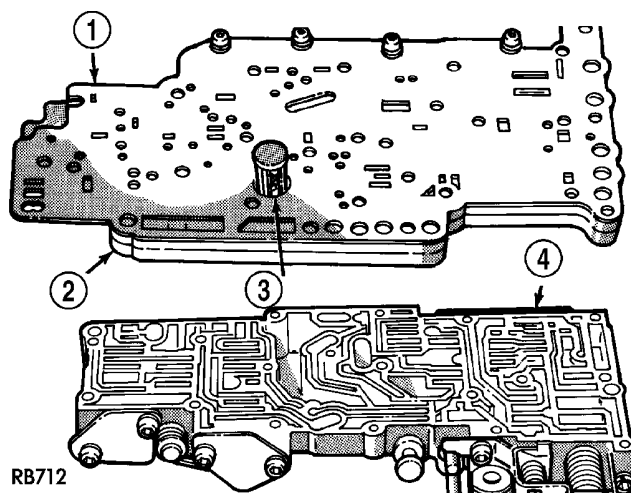
NOTE: Tighten all valve body screws to 5 N-m (40 in. lbs.)

CAUTION: Do not clamp any portion of valve body or transfer plate in a vise. Any slight distortion of the aluminum body or transfer plate will result in sticking valves, excessive leakage, or both. When

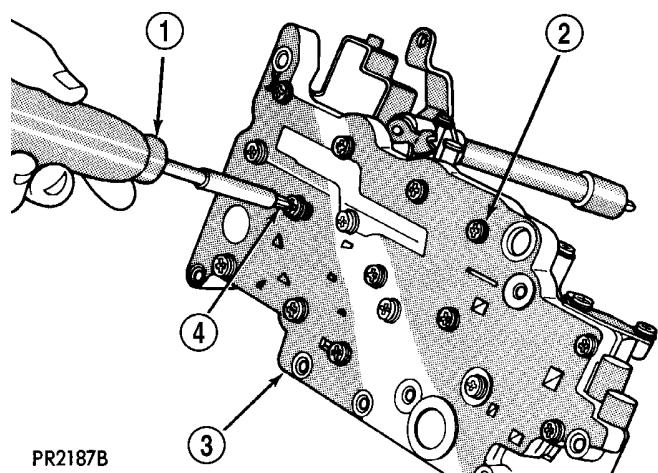
DISASSEMBLY AND ASSEMBLY (Continued)


Fig. 49 Using Tool L-4553 on Valve Body Screw

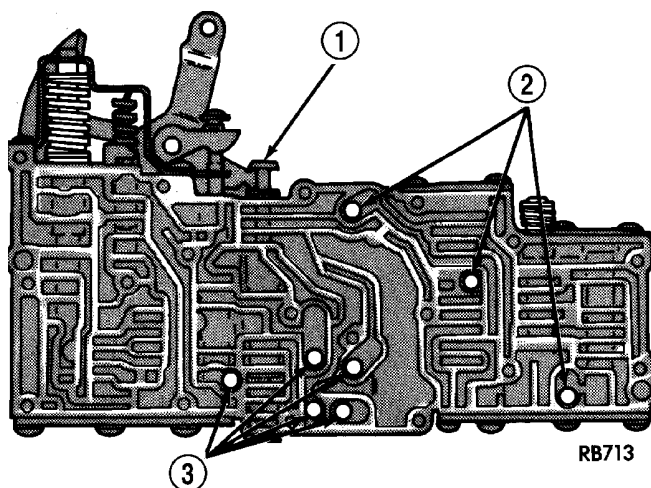
- 1 - SCREWDRIVER HANDLE
- 2 - VALVE BODY ASSEMBLY
- 3 - SPECIAL TOOL L-4553


Fig. 51 Transfer Plate and Separator Plate

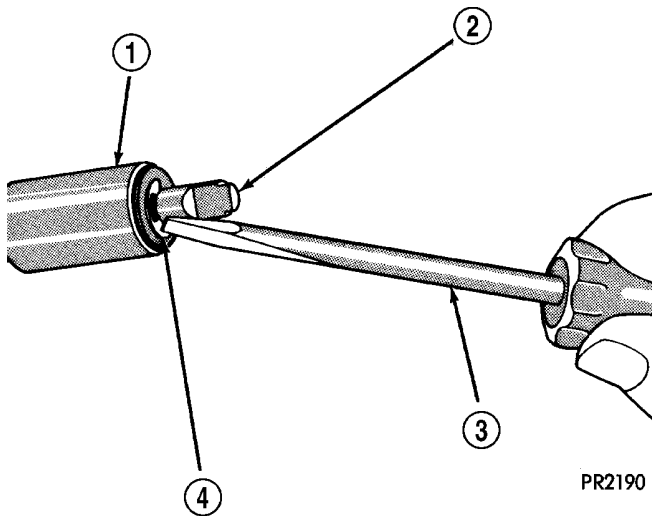
- 1 - SEPARATOR PLATE
- 2 - TRANSFER PLATE
- 3 - OIL SCREEN
- 4 - VALVE BODY


Fig. 50 Remove or Install Valve Body Screws

- 1 - SCREWDRIVER HANDLE
- 2 - VALVE BODY SCREWS (16)
- 3 - VALVE BODY
- 4 - SPECIAL TOOL L-4553


Fig. 52 Steel Ball Locations

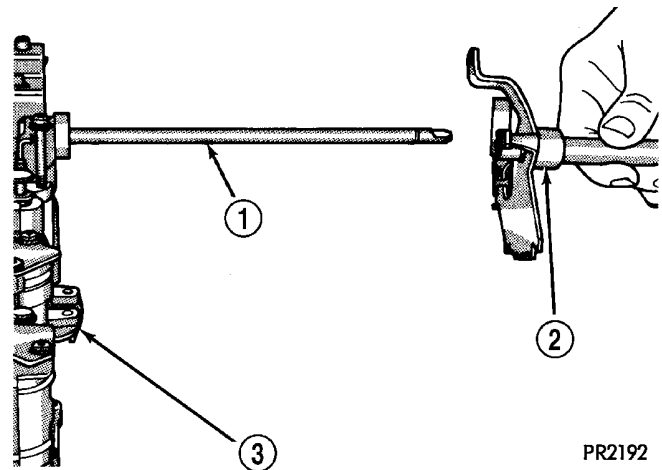
- 1 - MANUAL VALVE
- 2 - STEEL BALLS (8)
- 3 - STEEL BALLS



PR2190

Fig. 53 Remove or Install Throttle Shaft E-Clip

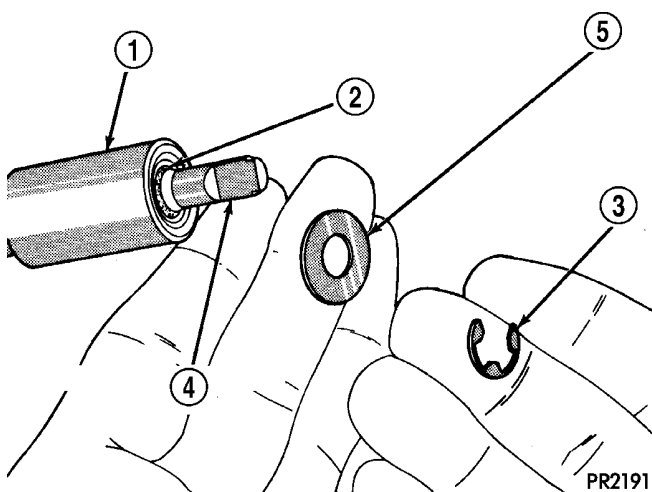
- 1 - MANUAL VALVE LEVER ASSEMBLY
- 2 - THROTTLE VALVE LEVER ASSEMBLY
- 3 - SCREWDRIVER
- 4 - "E" CLIP



PR2192

Fig. 55 Manual Valve Lever Assembly

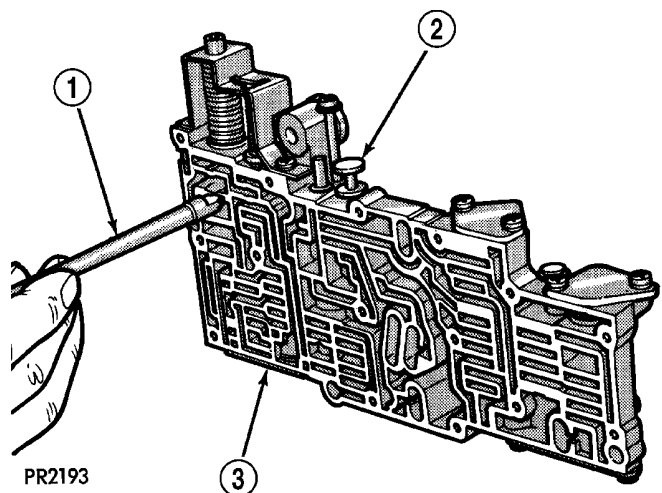
- 1 - THROTTLE VALVE LEVER ASSEMBLY
- 2 - MANUAL VALVE LEVER ASSEMBLY
- 3 - VALVE BODY



PR2191

Fig. 54 Throttle Shaft E-Clip, Washer, and Seal

- 1 - MANUAL VALVE LEVER ASSEMBLY
- 2 - OIL SEAL
- 3 - "E" CLIP
- 4 - THROTTLE VALVE LEVER ASSEMBLY
- 5 - WASHER



PR2193

Fig. 56 Throttle Valve Lever Assembly

- 1 - THROTTLE VALVE LEVER ASSEMBLY
- 2 - MANUAL VALVE
- 3 - VALVE BODY

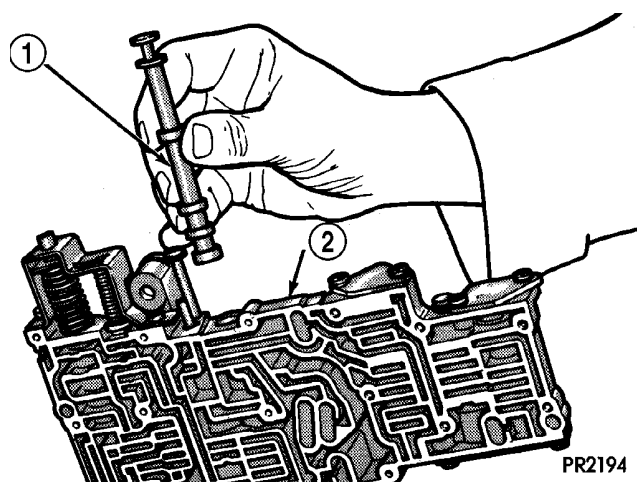


Fig. 57 Manual Valve

- 1 - MANUAL VALVE
- 2 - VALVE BODY

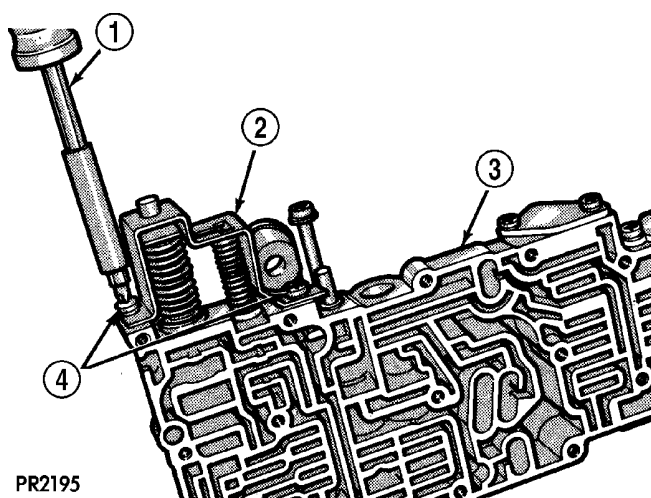


Fig. 58 Pressure Regulator and Adjusting Screw Bracket

- 1 - SCREWDRIVER HANDLE
- 2 - PRESSURE REGULATOR SPRING RETAINER AND ADJUSTING SCREW BRACKET
- 3 - VALVE BODY
- 4 - SCREWS

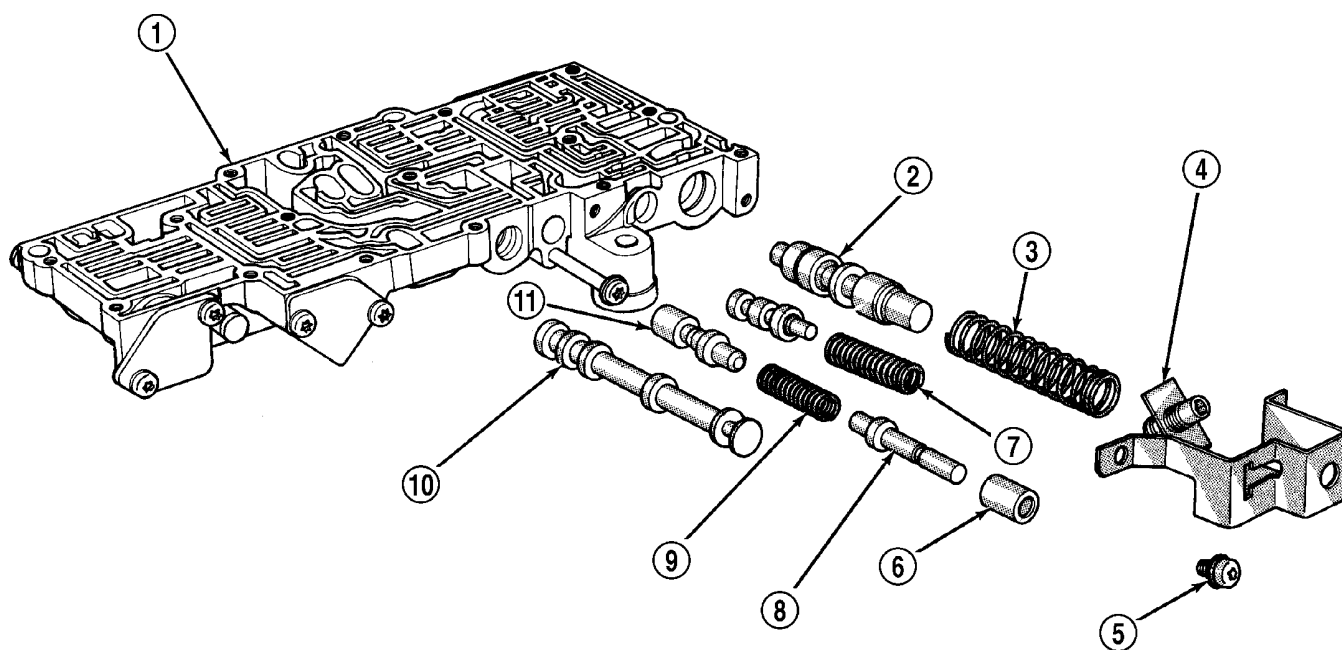
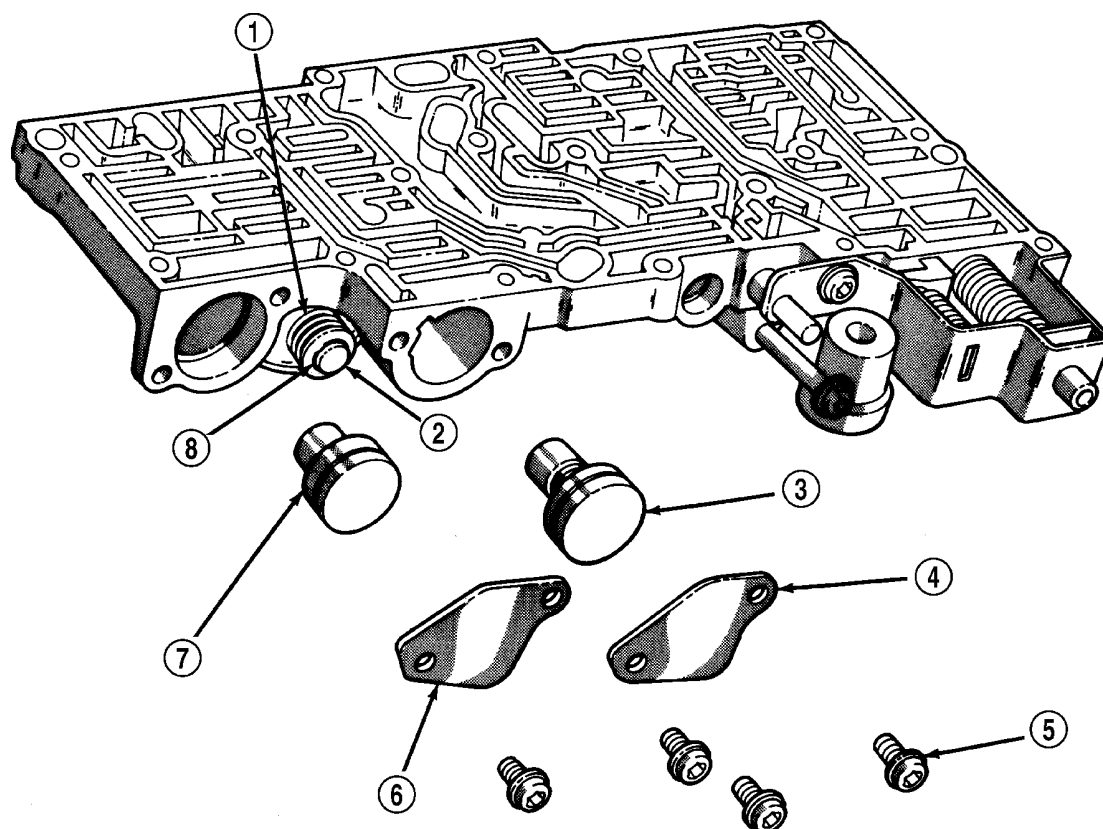


Fig. 59 Pressure Regulators and Manual Controls

- 1 - VALVE BODY
- 2 - LINE PRESSURE VALVE
- 3 - SPRING
- 4 - ADJUSTING SCREW
- 5 - SCREW
- 6 - GUIDE
- 7 - SPRING
- 8 - KICKDOWN VALVE
- 9 - SPRING
- 10 - MANUAL VALVE
- 11 - THROTTLE VALVE

PR2196A

DISASSEMBLY AND ASSEMBLY (Continued)



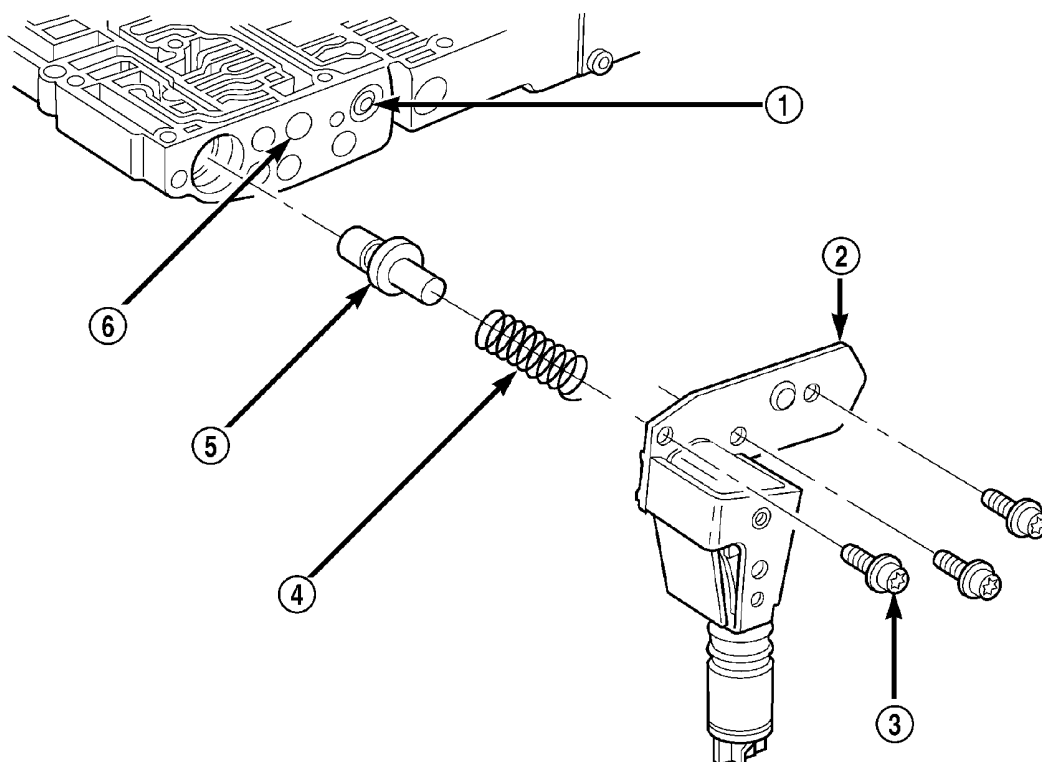
RB714

Fig. 60 Governor Plugs

- 1 - SHUTTLE VALVE SECONDARY SPRING
- 2 - SHUTTLE VALVE
- 3 - 1-2 SHIFT VALVE GOVERNOR PLUG
- 4 - END COVER

- 5 - SCREW (4)
- 6 - END COVER
- 7 - 2-3 SHIFT VALVE GOVERNOR PLUG
- 8 - E-CLIP

DISASSEMBLY AND ASSEMBLY (Continued)



80bdbd32

Fig. 61 Torque Converter Clutch Solenoid and Regulator/Control Valves

1 – CONVERTER PRESSURE CONTROL VALVE

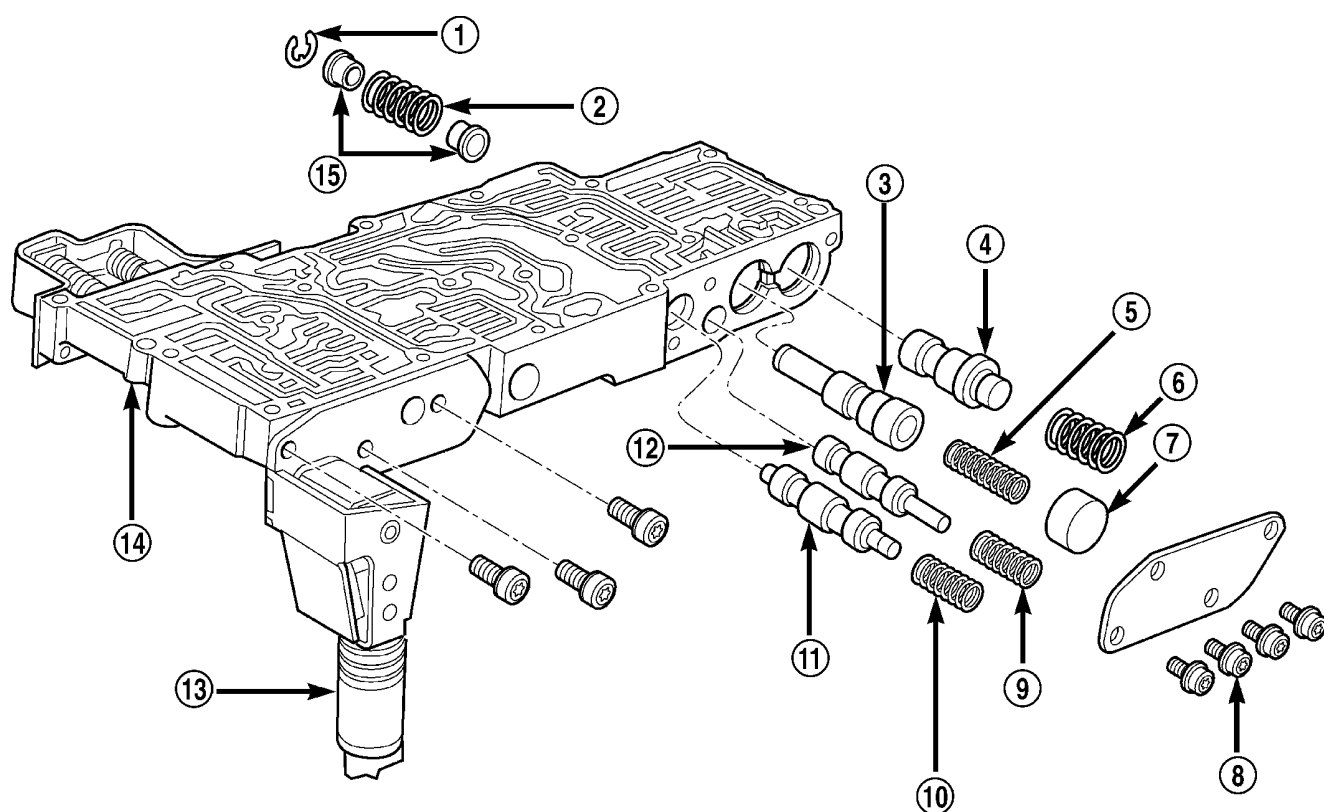
2 – END COVER

3 – SCREW (3)

4 – REGULATOR VALVE THROTTLE PRESSURE PLUG SPRING

5 – REGULATOR VALVE THROTTLE PRESSURE PLUG

6 – SWITCH VALVE



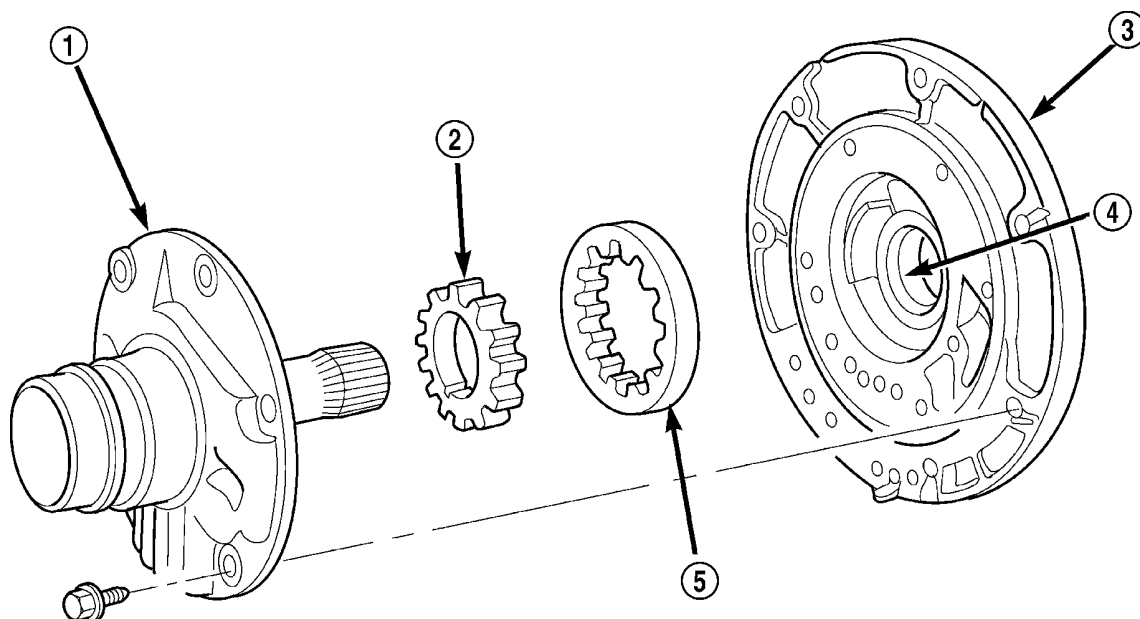
80bdbd30

Fig. 62 Shift Valves and Shuttle Valve

- | | |
|------------------------------------|---------------------------------------|
| 1 - SHUTTLE VALVE E-CLIP | 9 - BY-PASS VALVE SPRING |
| 2 - SHUTTLE VALVE SECONDARY SPRING | 10 - 1-2 SHIFT VALVE SPRING |
| 3 - SHUTTLE VALVE | 11 - 1-2 SHIFT VALVE |
| 4 - 2-3 SHIFT VALVE | 12 - BY-PASS VALVE |
| 5 - SHUTTLE VALVE PRIMARY SPRING | 13 - TORQUE CONVERTER CLUTCH SOLENOID |
| 6 - 2-3 SHIFT VALVE SPRING | 14 - VALVE BODY |
| 7 - SHUTTLE VALVE PLUG | 15 - SPRING GUIDES (2) |
| 8 - SCREWS | |

DISASSEMBLY AND ASSEMBLY (Continued)

OIL PUMP



80bdbd50

Fig. 63 Oil Pump Assembly

- 1 – REACTION SHAFT SUPPORT
2 – INNER GEAR
3 – PUMP BODY

- 4 – PUMP BUSHING
5 – OUTER GEAR

(1) Remove reaction shaft support-to-pump body bolts.

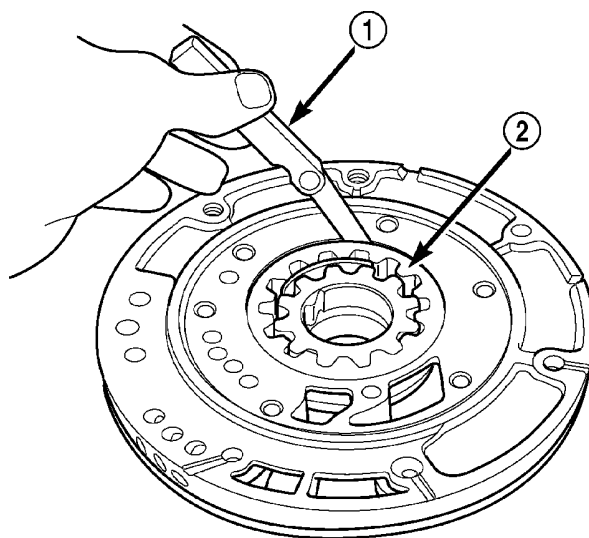
(2) Remove reaction shaft support, and the inner and outer pump gears (Fig. 63).

(3) Visually inspect gears for excessive wear.

(4) Inspect pump bushing for excessive wear.

(5) Reinstall gears and measure outer gear-to-pocket clearance. Clearance should be within 0.045-0.141 mm (0.0018-0.0056 in.).

(6) Measure both inner and outer gear side clearance using a straight edge and feeler gauge across the pump face. Inner and outer gear side clearance should be within 0.020-0.046 mm (0.0008-0.0018 in.).



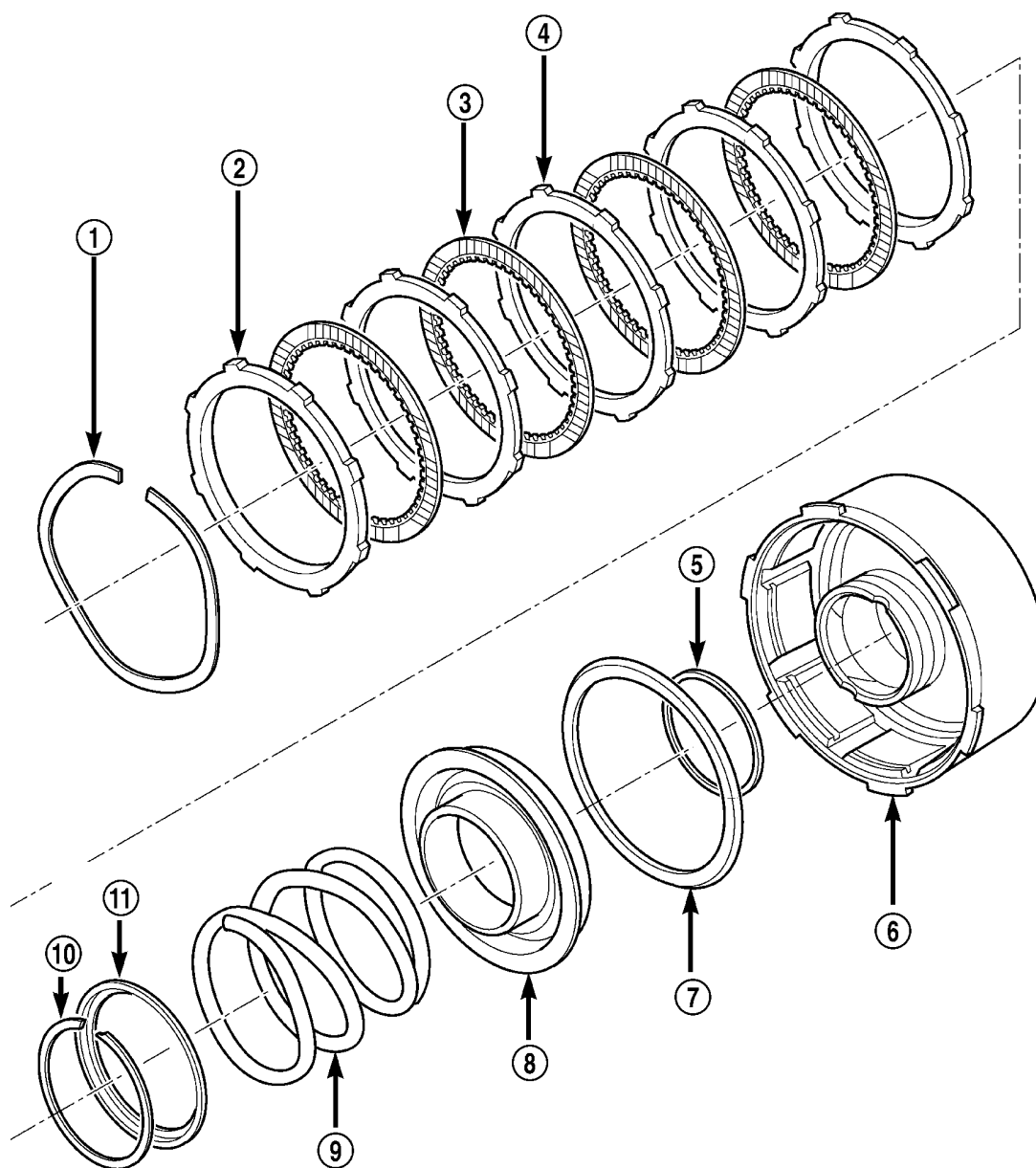
80bdbd00

Measuring Pump Outer Gear-to-Pocket Clearance)

- 1 – FEELER GAUGE
2 – OUTER GEAR

DISASSEMBLY AND ASSEMBLY (Continued)

FRONT CLUTCH



80bd40

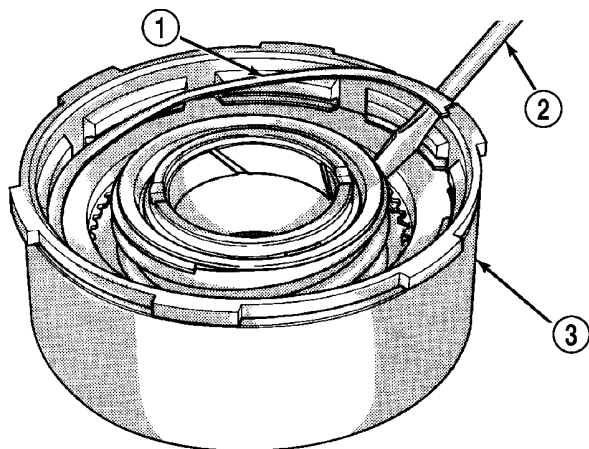
Front Clutch Assembly

- 1 - SNAP RING (WAVE)
- 2 - REACTION PLATE
- 3 - CLUTCH DISC
- 4 - CLUTCH PLATE
- 5 - SEAL
- 6 - CLUTCH RETAINER

- 7 - SEAL
- 8 - PISTON
- 9 - SPRING
- 10 - SNAP RING
- 11 - SPRING RETAINER

DISASSEMBLY AND ASSEMBLY (Continued)

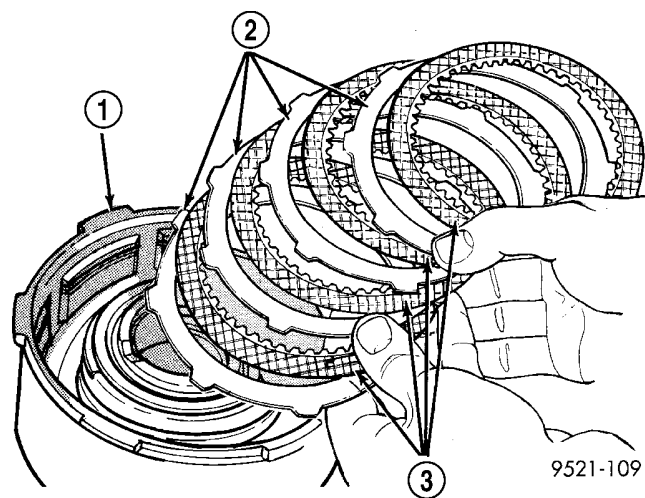
DISASSEMBLY



PR2229

Fig. 64 Front Clutch Waved Snap Ring

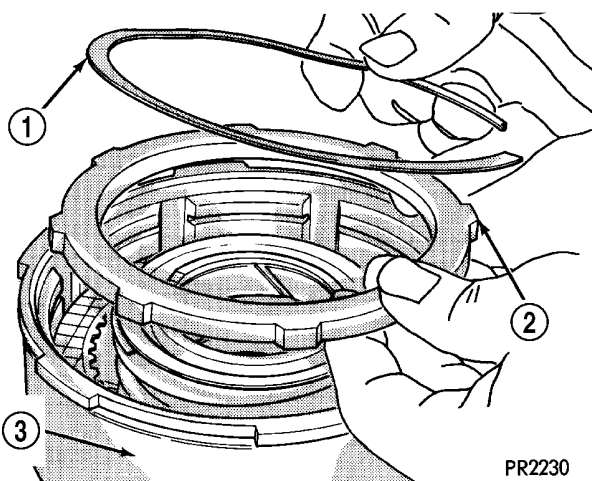
- 1 - WAVED SNAP RING
- 2 - SCREWDRIVER
- 3 - FRONT CLUTCH ASSEMBLY



9521-109

Fig. 66 Front Clutch (4-Disc Shown)

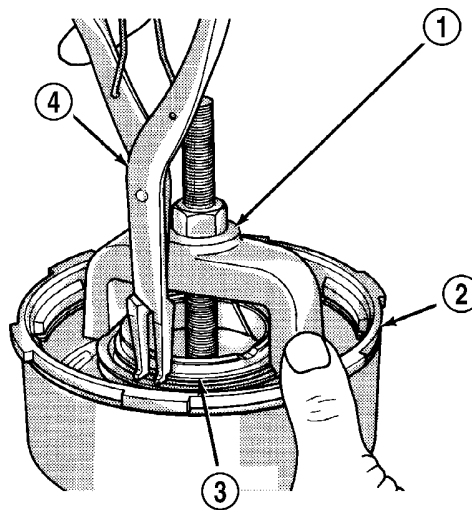
- 1 - FRONT CLUTCH RETAINER
- 2 - CLUTCH PLATES
- 3 - DRIVING DISCS



PR2230

Fig. 65 Thick Steel Plate and Waved Snap Ring

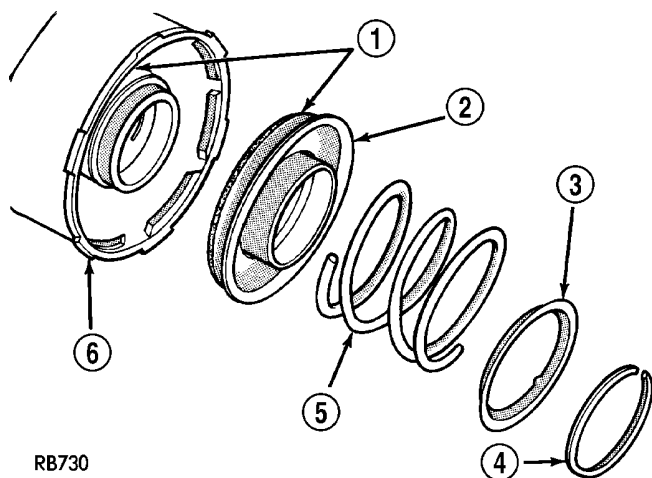
- 1 - WAVED SNAP RING
- 2 - THICK STEEL PLATE
- 3 - FRONT CLUTCH RETAINER



PR2232

Fig. 67 Front Clutch Return Spring Snap Ring

- 1 - COMPRESSOR TOOL C-3575-A
- 2 - FRONT CLUTCH RETAINER
- 3 - SNAP RING
- 4 - SNAP RING PLIERS

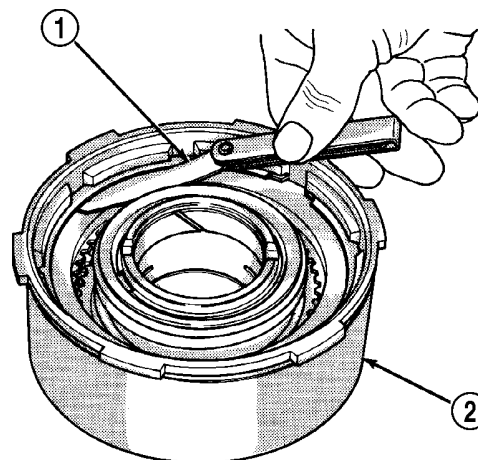


RB730

Fig. 68 Front Clutch Return Spring and Piston

- 1 - LIP SEALS
- 2 - PISTON
- 3 - RETURN SPRING RETAINER
- 4 - SNAP RING
- 5 - PISTON RETURN SPRING
- 6 - FRONT CLUTCH RETAINER

MEASURING PLATE CLEARANCE



PR2234

Fig. 69 Measuring Front Clutch Plate Clearance

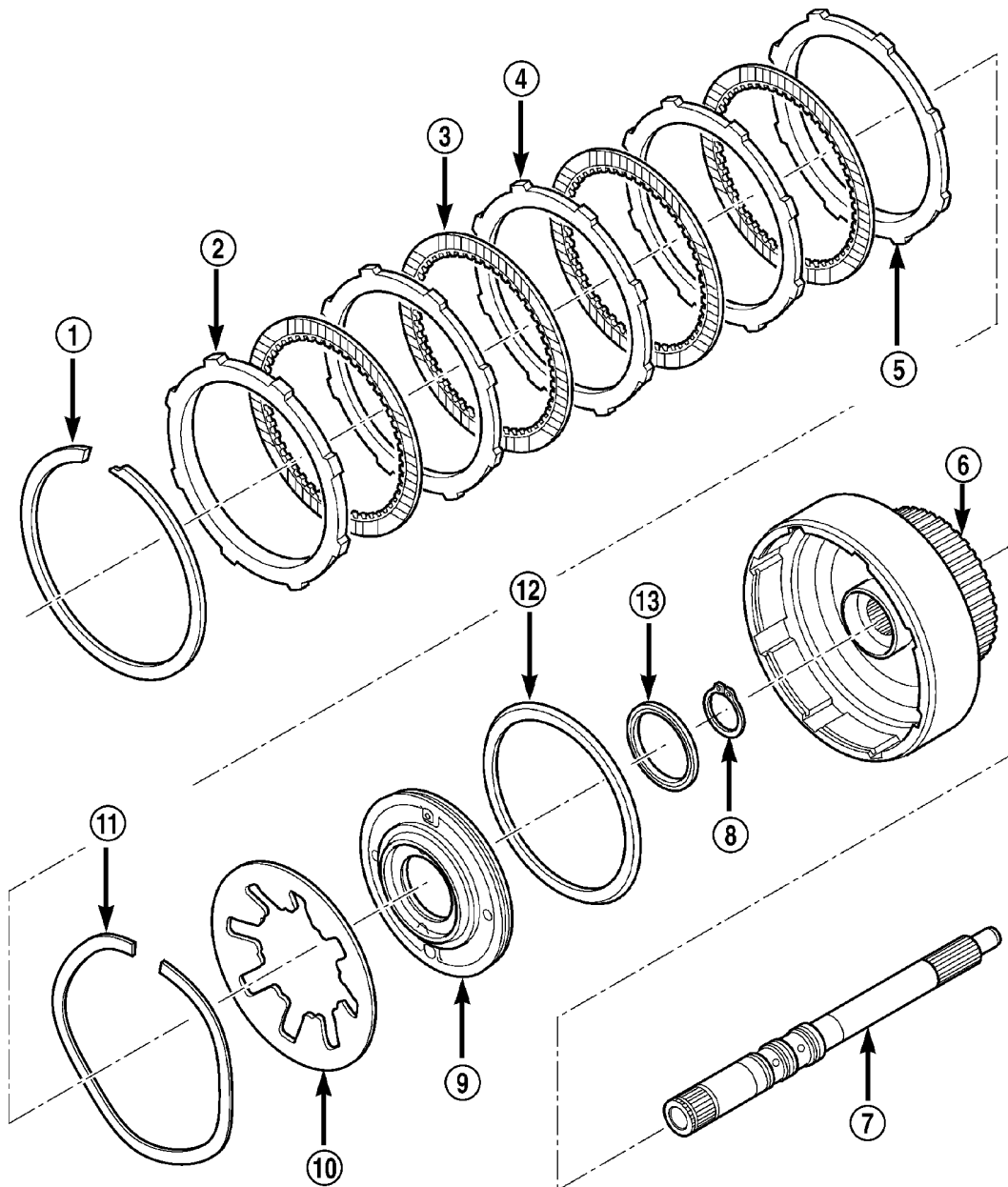
- 1 - FEELER GAUGE
- 2 - FRONT CLUTCH ASSEMBLY

ASSEMBLY

To reassemble, reverse the above procedure.

DISASSEMBLY AND ASSEMBLY (Continued)

REAR CLUTCH ASSEMBLY



80bdbd41

Rear Clutch Assembly

- 1 - SNAP RING (SELECT)
- 2 - REACTION PLATE
- 3 - CLUTCH DISC
- 4 - CLUTCH PLATE
- 5 - REACTION PLATE
- 6 - CLUTCH RETAINER
- 7 - INPUT SHAFT

- 8 - SNAP RING
- 9 - PISTON
- 10 - SPRING
- 11 - SNAP RING (WAVE)
- 12 - SEAL
- 13 - SEAL

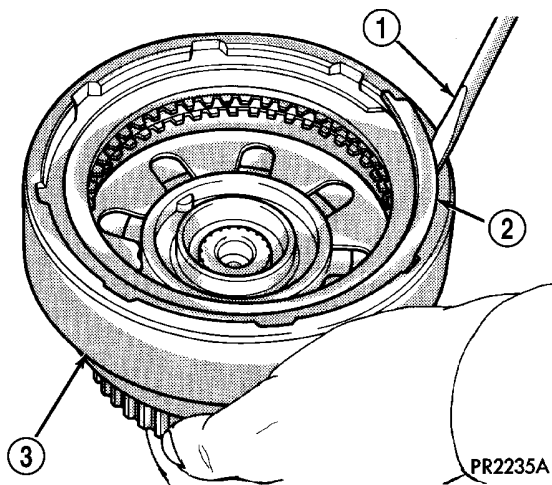


Fig. 70 Rear Clutch Outer Snap Ring

- 1 - SCREWDRIVER
- 2 - SNAP RING
- 3 - REAR CLUTCH ASSEMBLY

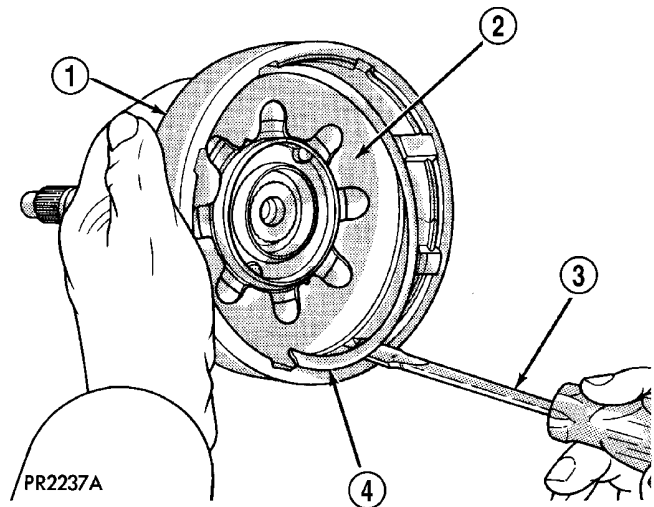


Fig. 72 Piston Spring Waved Snap Ring

- 1 - REAR CLUTCH RETAINER
- 2 - PISTON SPRING
- 3 - SCREWDRIVER
- 4 - WAVED SNAP RING

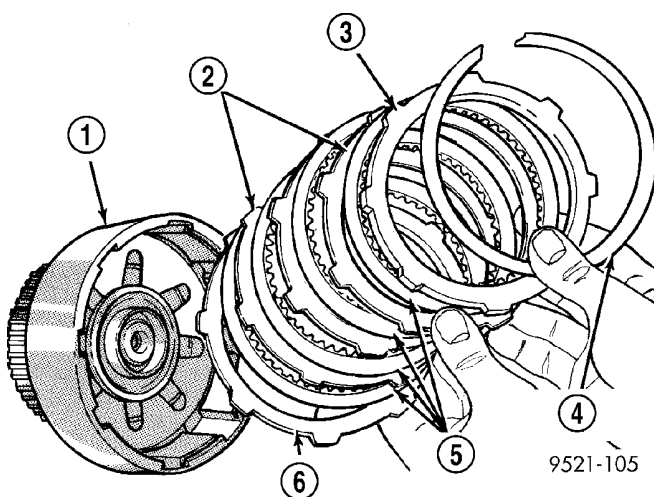


Fig. 71 Rear Clutch (4-Disc Shown)

- 1 - REAR CLUTCH RETAINER
- 2 - CLUTCH PLATES
- 3 - THICK STEEL PLATE
- 4 - SNAP RING (SELECTIVE)
- 5 - DRIVING DISCS
- 6 - PRESSURE PLATE

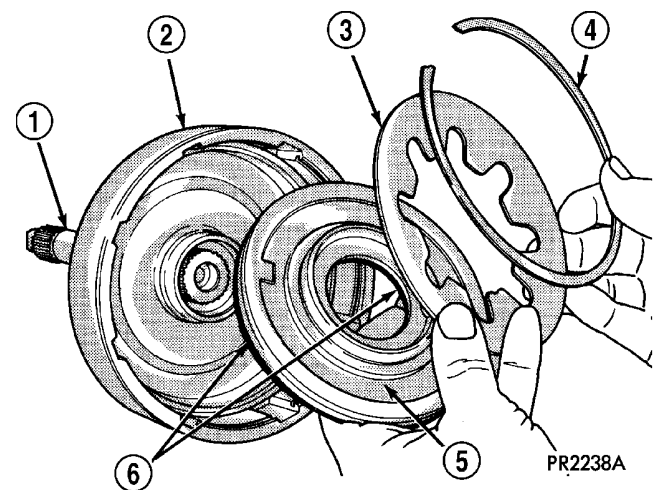
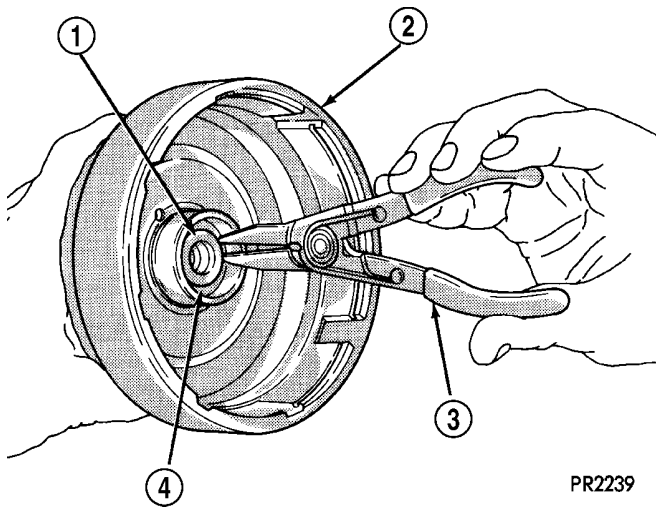


Fig. 73 Rear Clutch Piston and Piston Spring

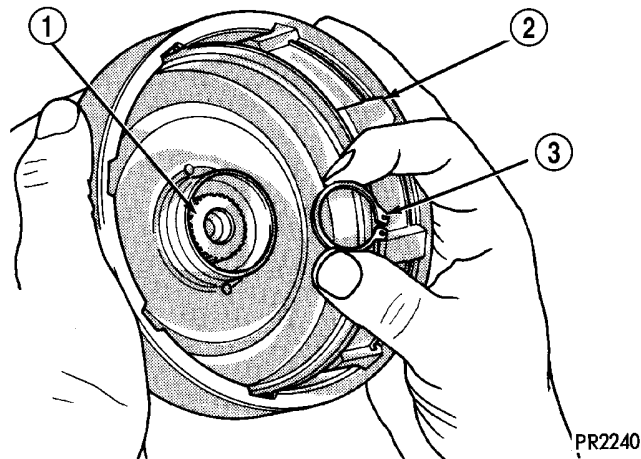
- 1 - INPUT SHAFT
- 2 - REAR CLUTCH RETAINER
- 3 - PISTON SPRING
- 4 - WAVED SNAP RING
- 5 - PISTON
- 6 - PISTON SEALS



PR2239

Fig. 74 Remove or Install Input Shaft Snap Ring

- 1 - INPUT SHAFT
- 2 - REAR CLUTCH RETAINER
- 3 - SNAP RING PLIERS
- 4 - SNAP RING



PR2240

Fig. 75 Input Shaft Snap Ring

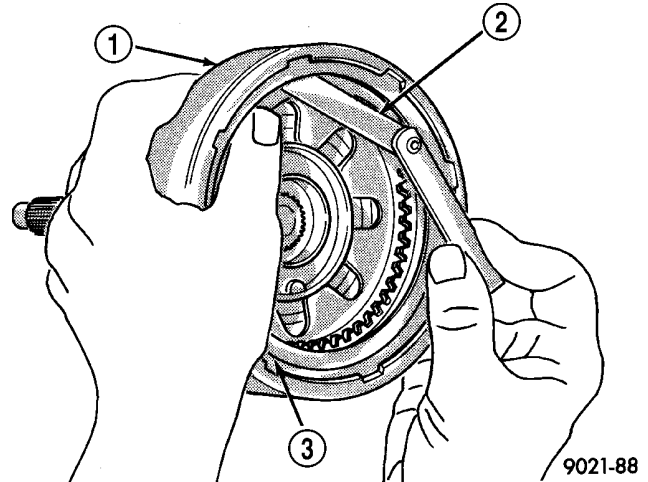
- 1 - INPUT SHAFT
- 2 - REAR CLUTCH RETAINER
- 3 - SNAP RING

Press out input shaft, if required.

ASSEMBLY

To reassemble, reverse the above procedure.

MEASURING PLATE CLEARANCE

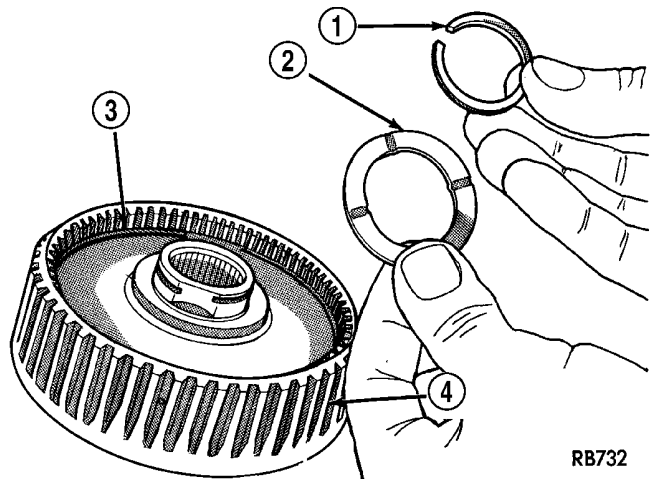


9021-88

Fig. 76 Measuring Rear Clutch Plate Clearance

- 1 - REAR CLUTCH ASSEMBLY
- 2 - FEELER GAUGE
- 3 - SELECTIVE SNAP RING

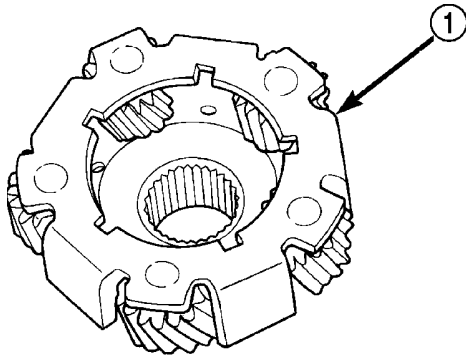
FRONT PLANETARY AND ANNULUS GEAR-RECONDITION



RB732

Fig. 77 Front Planetary Gear Snap Ring and No. 4 Thrust Washer (Always Install a New Snap Ring)

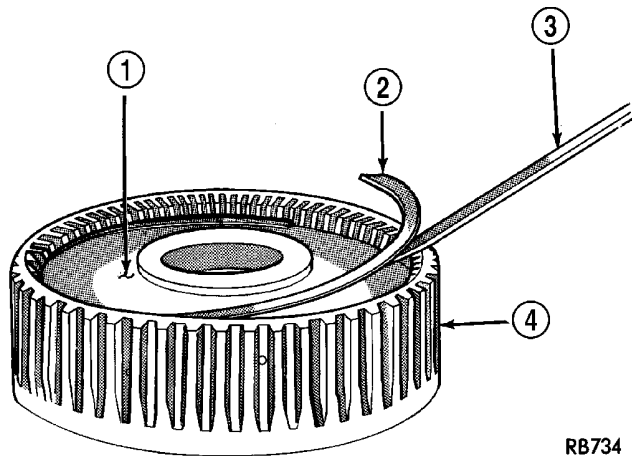
- 1 - SNAP RING
- 2 - #4 THRUST WASHER
- 3 - SNAP RING
- 4 - FRONT PLANETARY GEAR ASSEMBLY



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Fig. 78 Front Planetary Gear

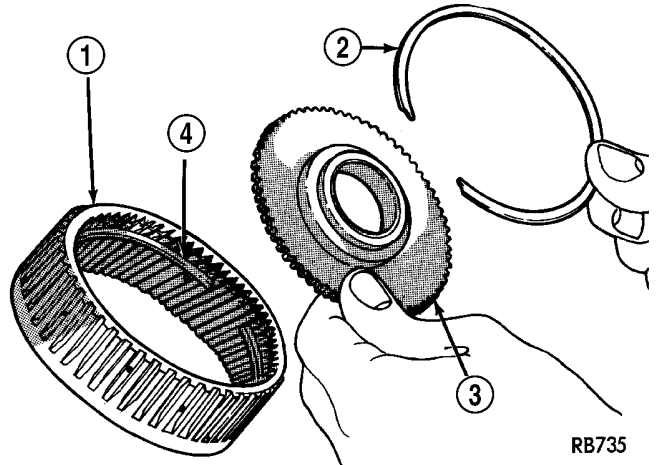
1 - FRONT PLANETARY GEAR ASSEMBLY



RB734

Fig. 79 Annulus Gear Support Front Snap Ring

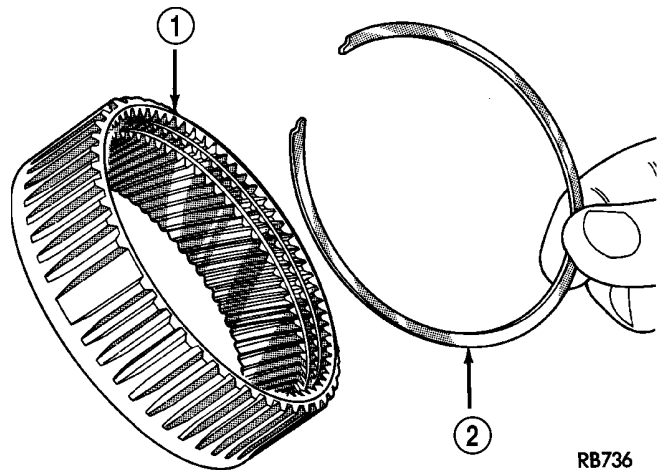
1 - ANNULUS GEAR SUPPORT
2 - FRONT SNAP RING
3 - SCREWDRIVER
4 - FRONT PLANETARY ANNULUS GEAR



RB735

Fig. 80 Front Annulus Gear Support and Snap Ring

1 - FRONT ANNULUS GEAR
2 - FRONT SNAP RING
3 - FRONT ANNULUS GEAR SUPPORT
4 - REAR SNAP RING



RB736

Fig. 81 Front Annulus Gear Support Snap Ring

1 - FRONT ANNULUS GEAR
2 - REAR SNAP RING

DISASSEMBLY AND ASSEMBLY (Continued)

LOW/REVERSE (REAR) SERVO-RECONDITION

DISASSEMBLY

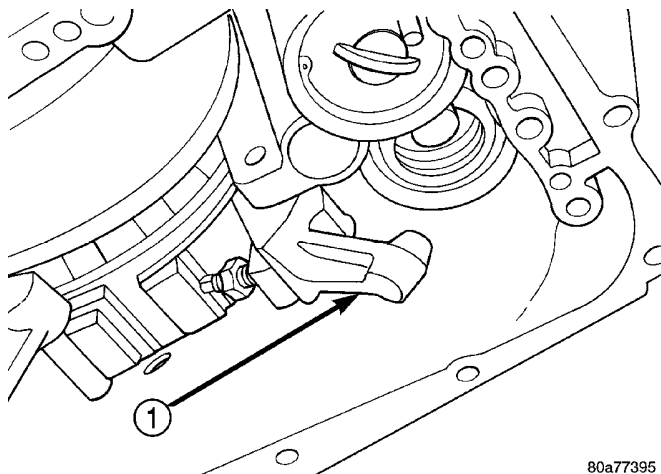


Fig. 82 Low/Reverse Lever

1 – LOW-REVERSE LEVER

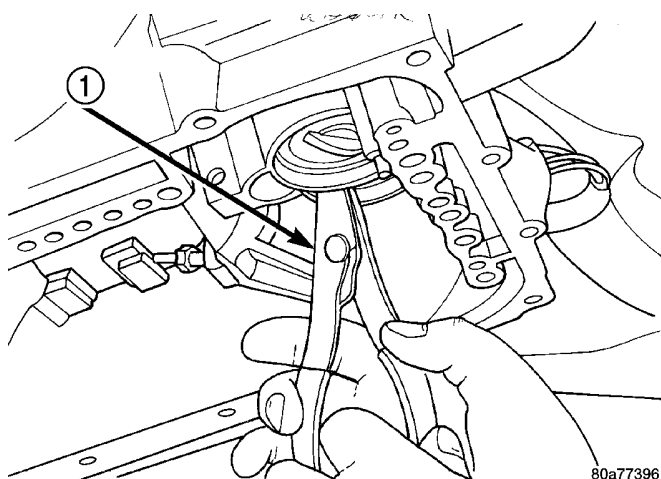


Fig. 83 Low/Reverse Servo Snap Ring

1 – SNAP-RING PLIERS

ASSEMBLY

To assemble, reverse the above procedure.

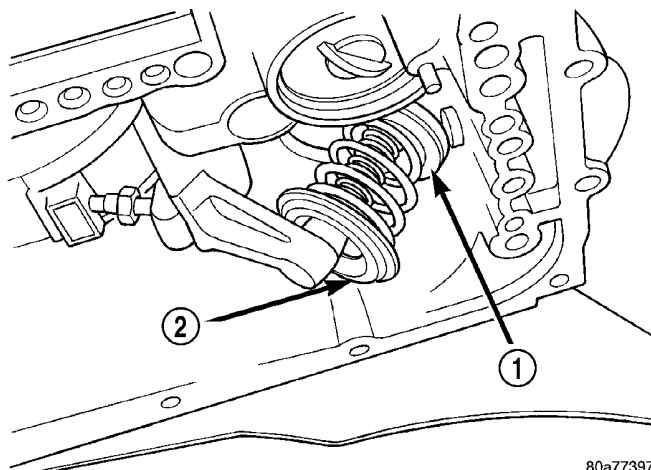


Fig. 84 Remove Retainer, Spring and Servo

1 – SERVO PISTON
2 – SPRING AND RETAINER

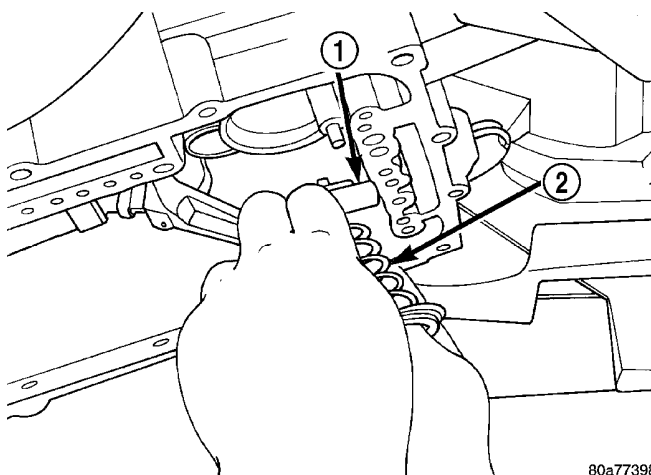


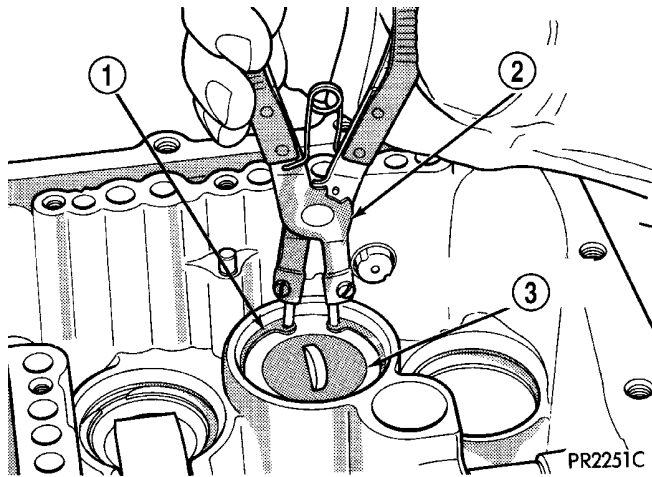
Fig. 85 Low/Reverse Servo Assembly

1 – SERVO PISTON
2 – SPRING

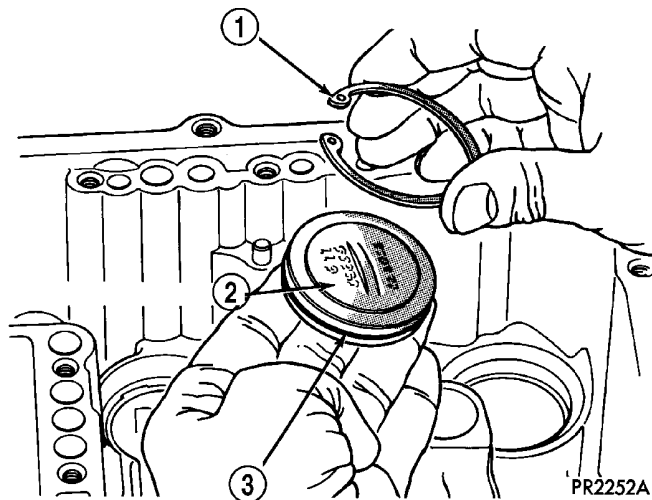
DISASSEMBLY AND ASSEMBLY (Continued)

ACCUMULATOR-RECONDITION

DISASSEMBLY

**Fig. 86 Accumulator Snap Ring**

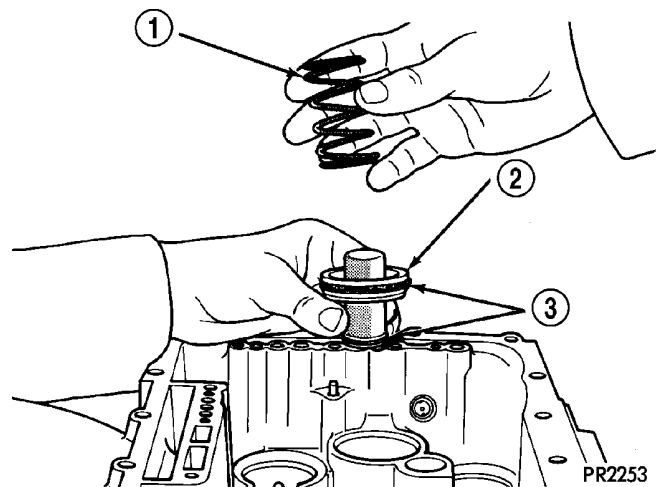
- 1 - ACCUMULATOR PLATE SNAP RING
- 2 - SNAP RING PLIERS
- 3 - ACCUMULATOR PLATE

**Fig. 87 Accumulator Plate and Snap Ring**

- 1 - SNAP RING
- 2 - ACCUMULATOR PLATE
- 3 - "O" RING

ASSEMBLY

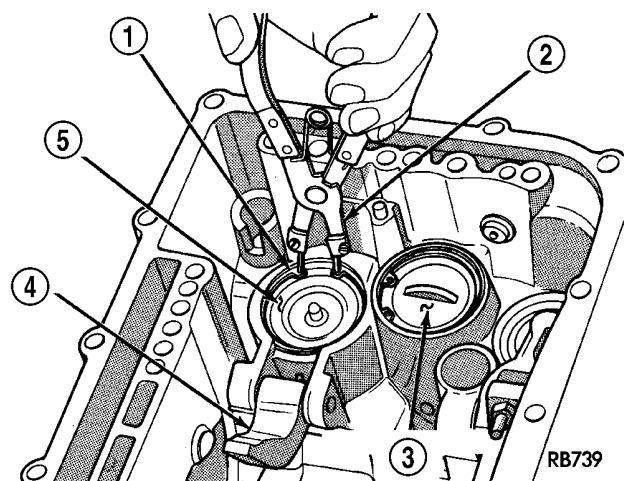
To assemble, reverse the above procedure.

**Fig. 88 Accumulator Spring and Piston**

- 1 - ACCUMULATOR SPRING
- 2 - ACCUMULATOR PISTON
- 3 - SEAL RINGS

KICKDOWN SERVO (CONTROLLED LOAD)-RECONDITION

DISASSEMBLY

**Fig. 89 Kickdown Servo Snap Ring**

- 1 - SNAP RING
- 2 - SNAP RING PLIERS
- 3 - ACCUMULATOR PLATE
- 4 - KICKDOWN LEVER
- 5 - KICKDOWN PISTON ROD GUIDE

ASSEMBLY

To assemble, reverse the above procedure.

DISASSEMBLY AND ASSEMBLY (Continued)

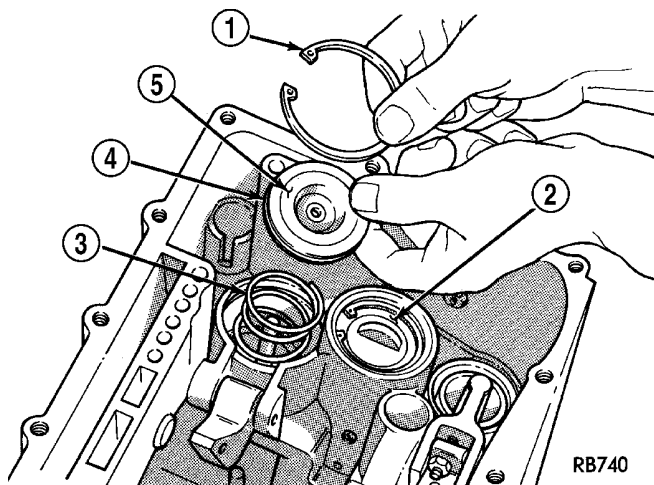


Fig. 90 Kickdown Servo Rod Guide and Snap Ring

- 1 – SNAP RING
- 2 – ACCUMULATOR PLATE
- 3 – RETURN SPRING
- 4 – O-RING
- 5 – PISTON ROD GUIDE

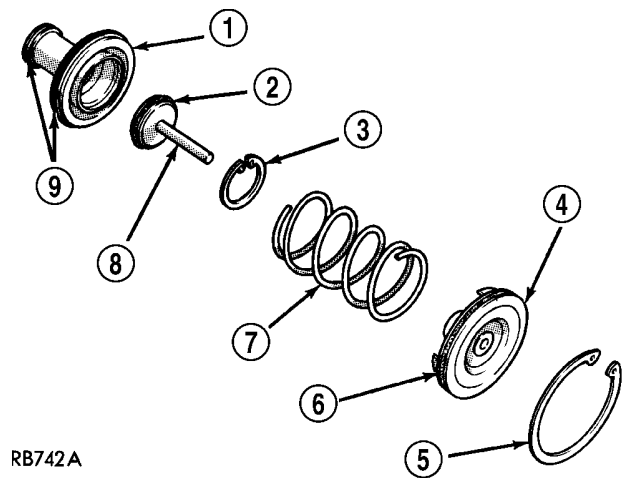


Fig. 92 Controlled Load Kickdown Servo

- 1 – KICKDOWN PISTON
- 2 – O-RING
- 3 – SNAP RING
- 4 – PISTON ROD GUIDE
- 5 – SNAP RING
- 6 – O-RING
- 7 – PISTON RETURN SPRING
- 8 – PISTON ROD
- 9 – SEAL RINGS

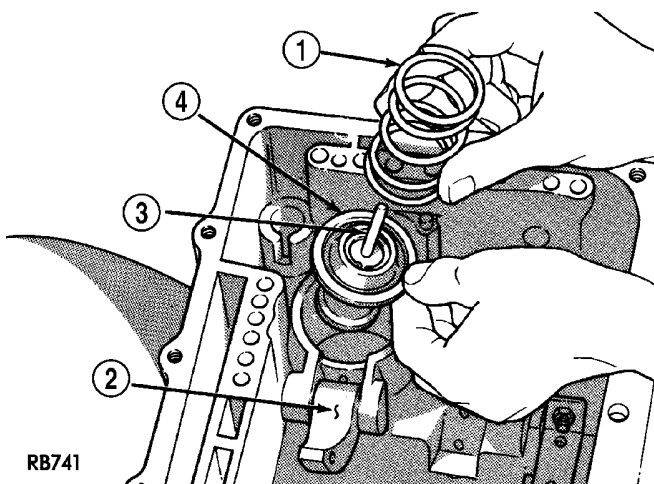


Fig. 91 Kickdown Piston Return Spring and Piston

- 1 – RETURN SPRING
- 2 – KICKDOWN LEVER
- 3 – PISTON ROD
- 4 – KICKDOWN SERVO PISTON

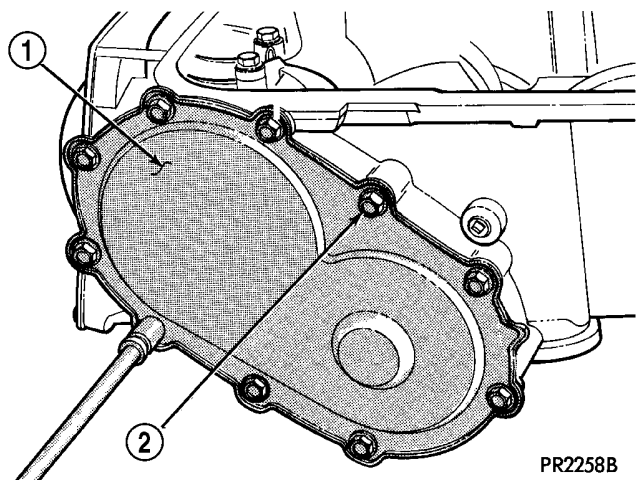


Fig. 93 Rear Cover Bolts

- 1 – REAR COVER
- 2 – REAR COVER BOLTS (10)

TRANSFER SHAFT REPAIR

DISASSEMBLY

NOTE: Remove old sealant before applying new sealant. Use Mopar® RTV sealant, or equivalent, when installing cover.

STIRRUP AND STRAP REMOVAL

NOTE: A stirrup and retaining strap is attached to the transfer gear. The stirrup prevents the transfer gear retaining nut from turning and backing off the transfer shaft. The strap is used to hold the stirrup to the transfer gear and prevent the stirrup retaining bolts from backing out.

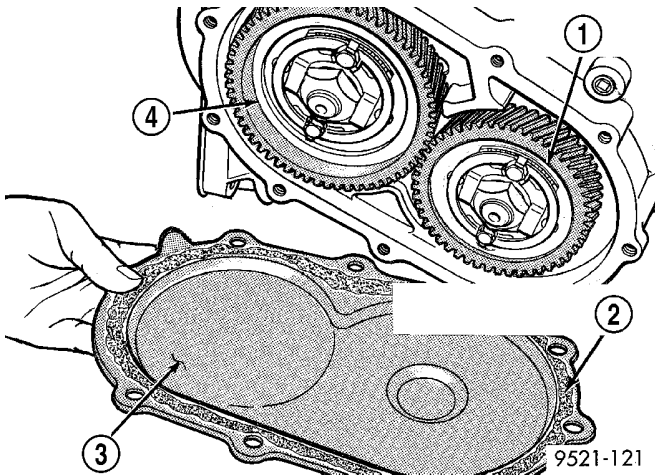


Fig. 94 Remove or Install Rear Cover

- 1 - OUTPUT SHAFT GEAR
- 2 - USE MOPAR SILICONE RUBBER ADHESIVE SEALER
- 3 - REAR COVER
- 4 - TRANSFER SHAFT GEAR

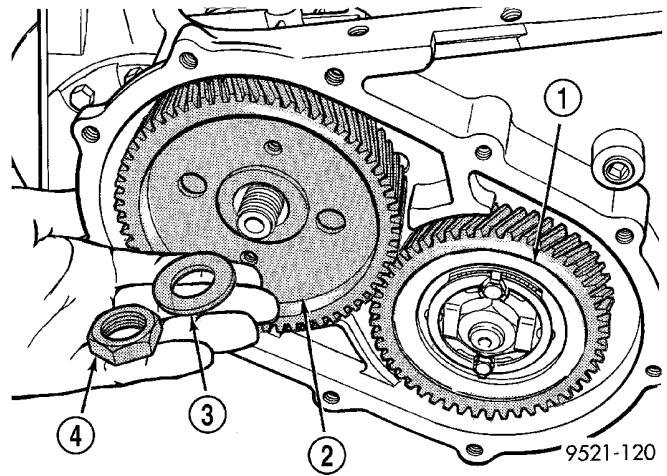


Fig. 96 Transfer Shaft Gear Nut and Washer

- 1 - OUTPUT SHAFT GEAR
- 2 - TRANSFER SHAFT GEAR
- 3 - WASHER
- 4 - NUT

- (1) Using a punch, bend tabs on strap flat against transfer gear.
- (2) Remove bolts holding retaining strap to stirrup.
- (3) Remove strap from transfer gear and stirrup.
- (4) Remove stirrup from transfer gear.

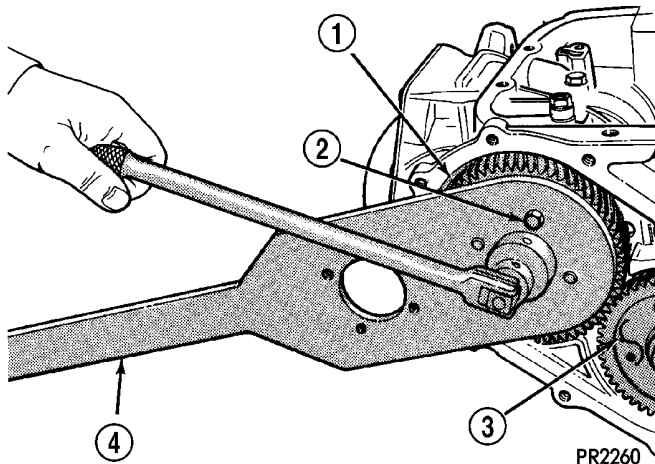
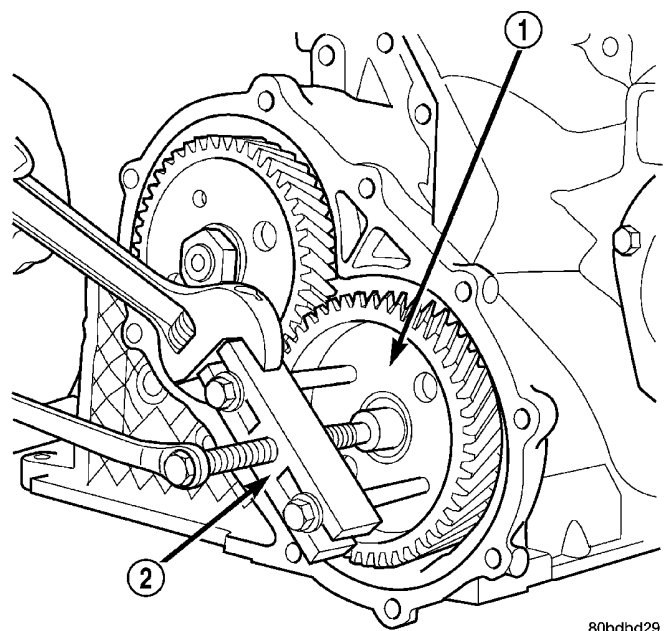


Fig. 95 Remove Transfer Shaft Gear Retaining Nut

- 1 - TRANSFER SHAFT GEAR
- 2 - SCREW (2)
- 3 - OUTPUT SHAFT GEAR
- 4 - SPECIAL TOOL L-4434



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Fig. 97 Remove Transfer Shaft Gear using L-4407A

- 1 - TRANSFER GEAR
- 2 - TOOL L-4407A

NOTE: Remove or install both governor valves and governor body.

DISASSEMBLY AND ASSEMBLY (Continued)

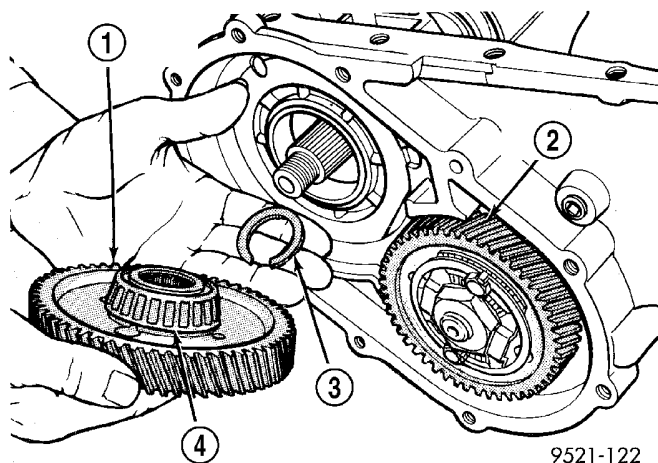


Fig. 98 Transfer Shaft Gear and (Select) Shim

- 1 - TRANSFER SHAFT GEAR
- 2 - OUTPUT SHAFT GEAR
- 3 - SHIM (SELECT)
- 4 - BEARING CONE

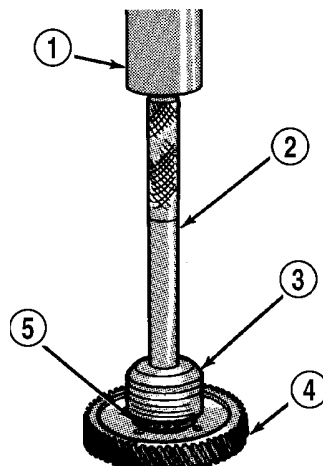


Fig. 100 Install Transfer Shaft Gear Bearing Cone

- 1 - PRESS
- 2 - HANDLE C-4171
- 3 - SPECIAL TOOL L-4410
- 4 - TRANSFER SHAFT GEAR
- 5 - BEARING CONE

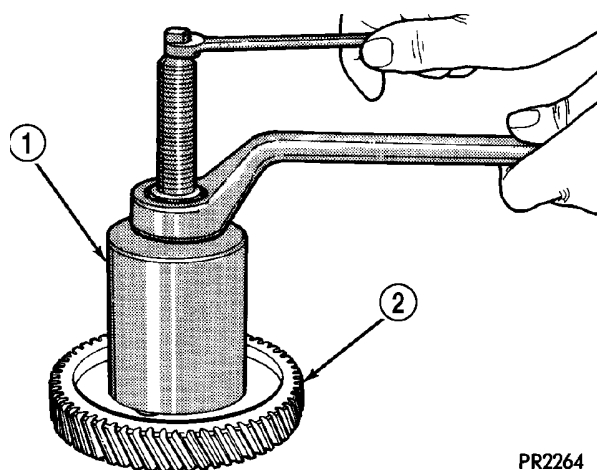


Fig. 99 Using Tool L-4406-1 with Adapter L-4406-3, Remove Transfer Shaft Gear Bearing Cone

- 1 - SPECIAL TOOL L-4406-1
- 2 - TRANSFER SHAFT GEAR

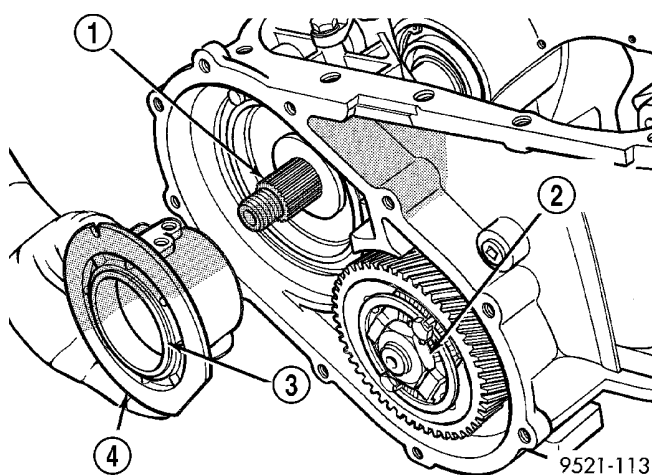
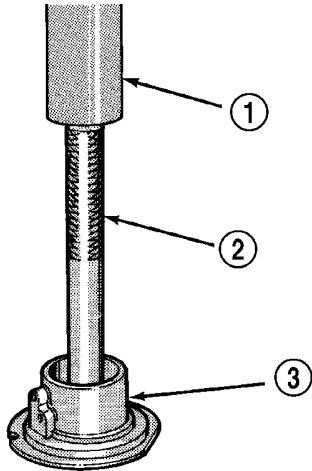


Fig. 101 Governor Support Retainer

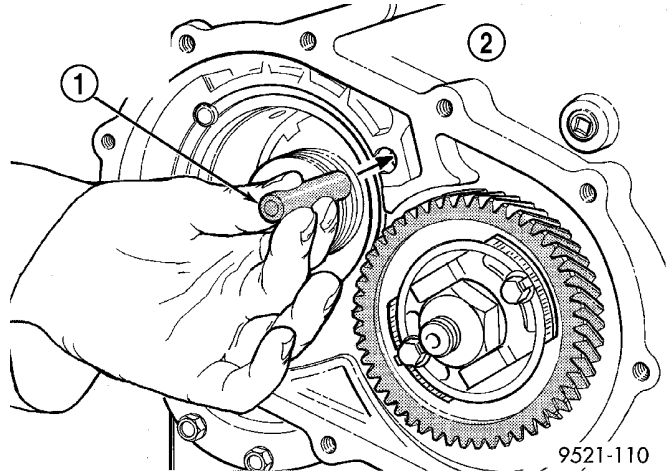
- 1 - TRANSFER SHAFT
- 2 - OUTPUT SHAFT GEAR
- 3 - BEARING CUP
- 4 - GOVERNOR SUPPORT RETAINER



PR2267A

Fig. 102 Remove Governor Support Retainer Bearing Cup

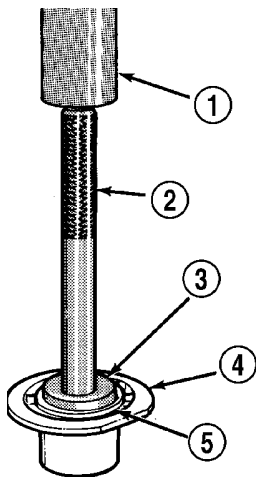
- 1 - PRESS
- 2 - HANDLE C-4171 (WITH SPECIAL TOOL L-4517)
- 3 - GOVERNOR SUPPORT RETAINER



9521-110

Fig. 104 Low/Reverse Band Anchor Pin

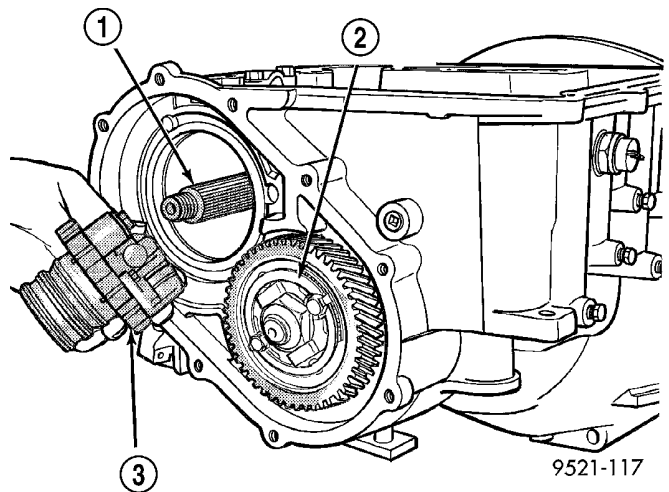
- 1 - LOW-REVERSE BAND ANCHOR PIN
- 2 - OUTPUT SHAFT GEAR



PR2268A

Fig. 103 Install Governor Support Retainer Bearing Cup

- 1 - PRESS
- 2 - HANDLE C-4171
- 3 - SPECIAL TOOL L-4520
- 4 - GOVERNOR SUPPORT RETAINER
- 5 - BEARING CUP



9521-117

Fig. 105 Governor Assembly

- 1 - TRANSFER SHAFT
- 2 - OUTPUT SHAFT GEAR
- 3 - GOVERNOR ASSEMBLY

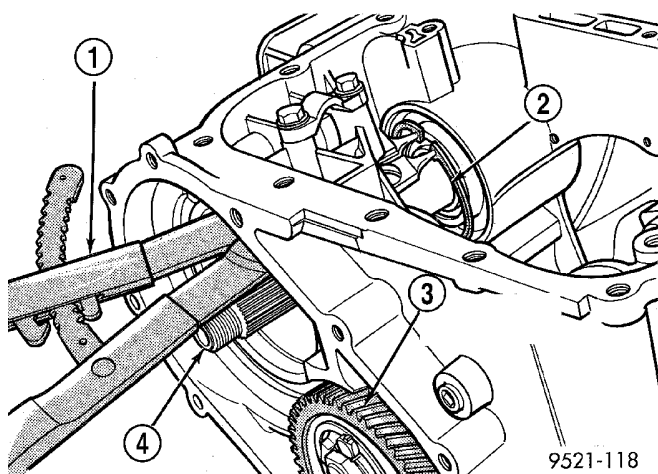


Fig. 106 Transfer Shaft Bearing Snap Ring

- 1 - SNAP RING PLIERS
- 2 - SNAP RING
- 3 - OUTPUT SHAFT GEAR
- 4 - TRANSFER SHAFT

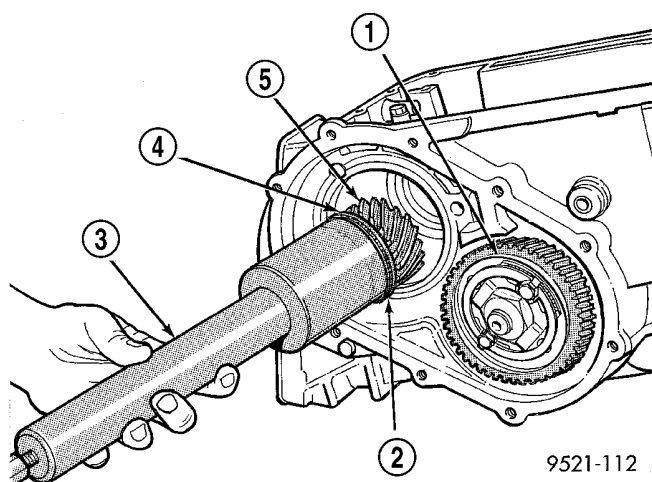


Fig. 108 Remove or Install Transfer Shaft and Bearing Retainer Assembly Using Tool L-4512

- 1 - OUTPUT SHAFT GEAR
- 2 - O-RING
- 3 - SPECIAL TOOL L-4512
- 4 - BEARING RETAINER ASSEMBLY
- 5 - TRANSFER SHAFT

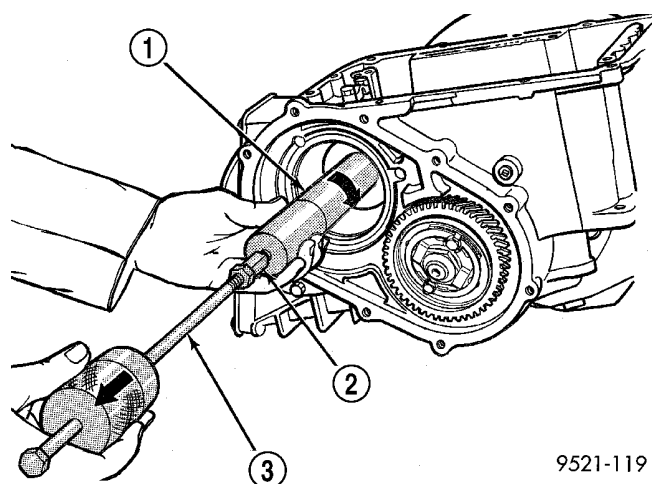


Fig. 107 Remove Transfer Shaft and Bearing Retainer Assembly

- 1 - SPECIAL TOOL L-4512
- 2 - SPECIAL TOOL L-4437
- 3 - SPECIAL TOOL C-3752

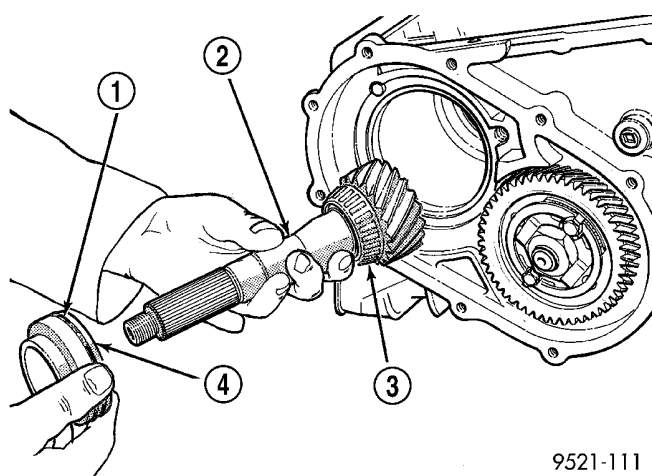
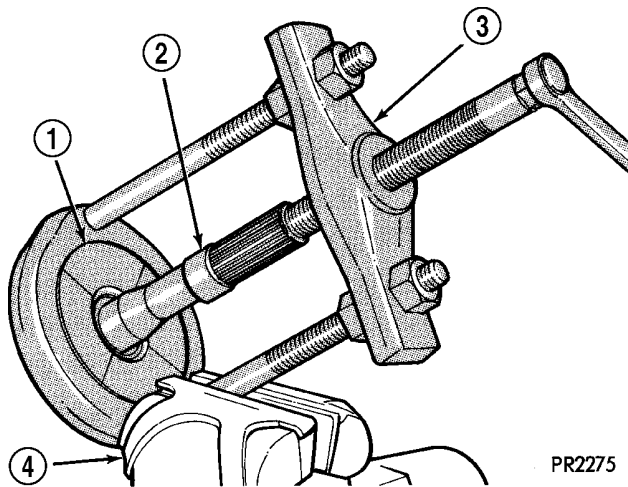


Fig. 109 Transfer Shaft and Bearing Retainer

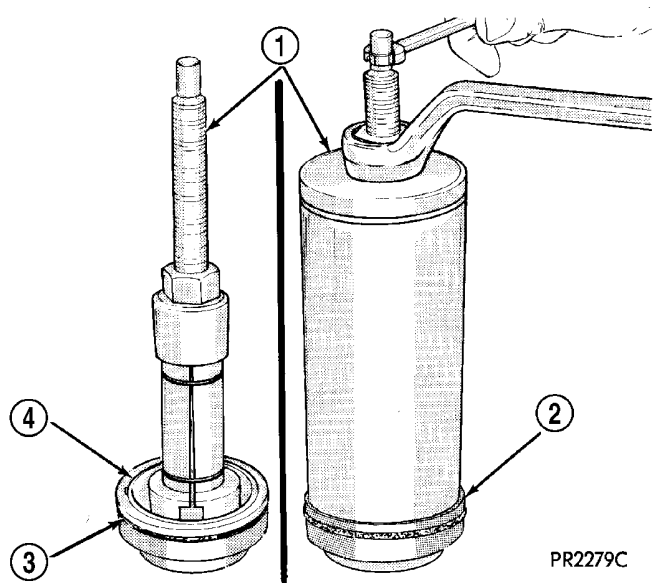
- 1 - O-RING
- 2 - TRANSFER SHAFT
- 3 - BEARING CONE
- 4 - TRANSFER SHAFT BEARING RETAINER



PR2275

Fig. 110 Remove Transfer Shaft Bearing Cone

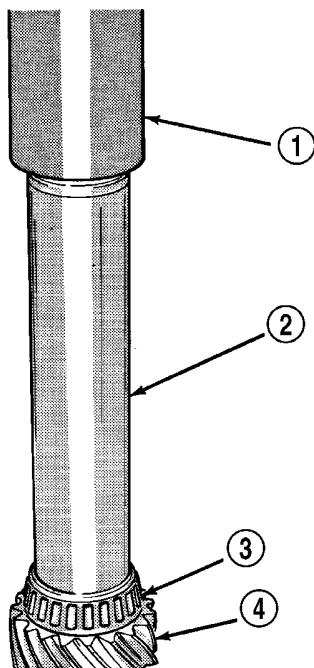
- 1 - TOOL C-293-52
- 2 - TRANSFER SHAFT
- 3 - TOOL C-293-PA
- 4 - VISE



PR2279C

Fig. 112 Remove Transfer Shaft Bearing Cup

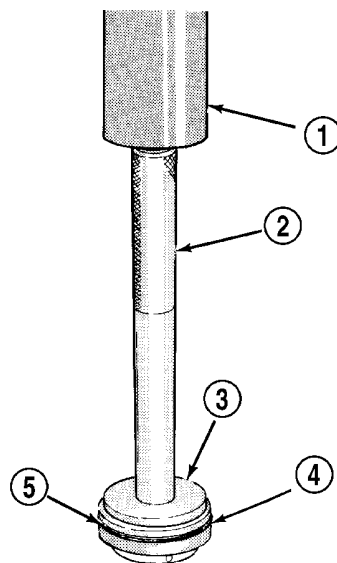
- 1 - SPECIAL TOOL L-4518
- 2 - TRANSFER SHAFT BEARING RETAINER
- 3 - "O" RING
- 4 - BEARING CUP



PR2276A

Fig. 111 Install Transfer Shaft Bearing Cone

- 1 - PRESS
- 2 - SPECIAL TOOL L-4411
- 3 - BEARING CONE
- 4 - TRANSFER SHAFT



PR2280C

Fig. 113 Install Transfer Shaft Bearing Cup

- 1 - PRESS
- 2 - HANDLE C-4171
- 3 - SPECIAL TOOL L-4520
- 4 - TRANSFER SHAFT BEARING RETAINER
- 5 - "O" RING

DISASSEMBLY AND ASSEMBLY (Continued)

DETERMINING SHIM THICKNESS

Shim thickness need be determined only if any of the following parts are replaced:

- Transaxle case
- Transfer shaft
- Transfer shaft gear
- Transfer shaft bearings
- Governor support retainer
- Transfer shaft bearing retainer
- Retainer snap ring
- Governor support

Refer to Bearing Adjustment Procedure in rear of this section to determine proper shim thickness.

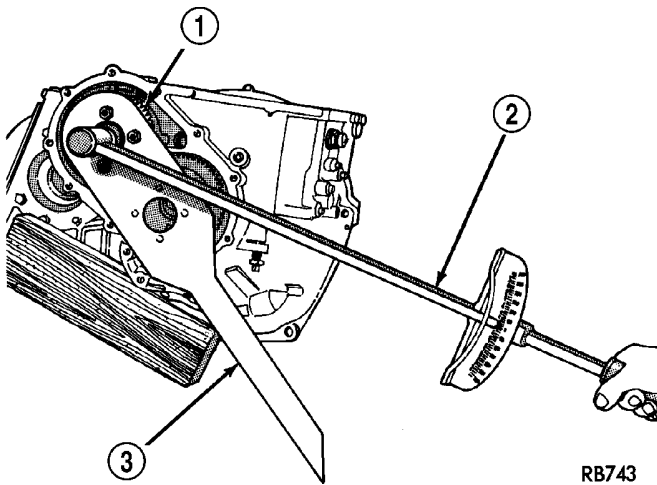


Fig. 114 Tighten Transfer Shaft Gear Retaining Nut to 271 N-m (200 ft. lbs.)

- 1 - TRANSFER SHAFT GEAR
- 2 - TORQUE WRENCH
- 3 - SPECIAL TOOL L-4434 AND ADAPTER C-4658

STIRRUP AND STRAP INSTALLATION

Once bearing shim selection has been adjusted, install stirrup and strap assembly onto transfer gear.

NOTE: Once the stirrup assembly is positioned onto the transfer gear, it is necessary to "clock" the stirrup against the flats of the transfer gear retaining nut.

- (1) Position the stirrup on the transfer gear.
- (2) Position strap.
- (3) Install retaining bolts into transfer gear. Finger-tighten bolts.
- (4) Turn stirrup clockwise against the flats of the transfer gear retaining nut.
- (5) Tighten retaining bolts to 23 N-m (200 in. lbs.).
- (6) Bend tabs of strap up against "flats" of retaining bolts.

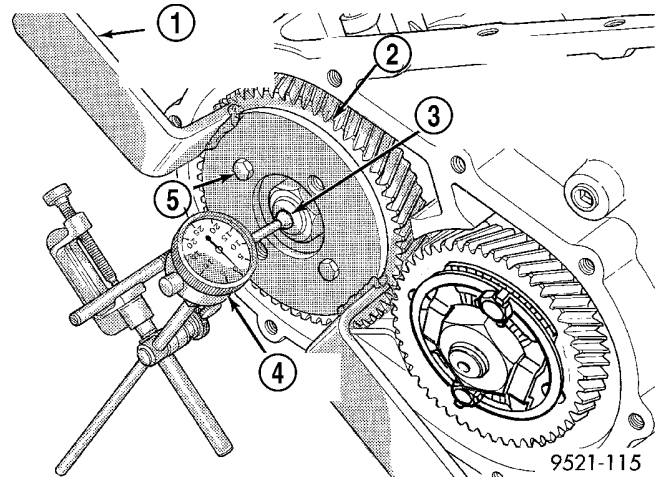


Fig. 115 Checking Transfer Shaft End Play

- 1 - SPECIAL TOOL L-4432 AND C-4658
- 2 - TRANSFER SHAFT GEAR
- 3 - STEEL BALL (USE GREASE TO HOLD IN PLACE)
- 4 - DIAL INDICATOR
- 5 - SCREW (2)

ASSEMBLY

To install transfer shaft, reverse the above procedure.

PARKING PAWL

DISASSEMBLY

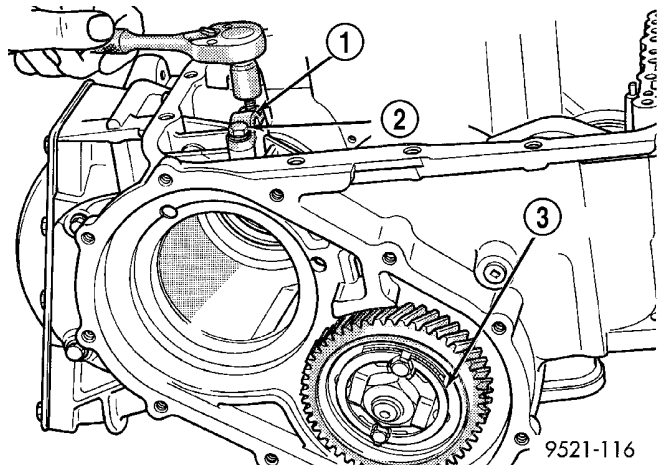


Fig. 116 Parking Sprag Rod Support

- 1 - PARKING SPRAG ROD SUPPORT
- 2 - BOLT (2)
- 3 - OUTPUT SHAFT GEAR

ASSEMBLY

To install, reverse the above procedure.

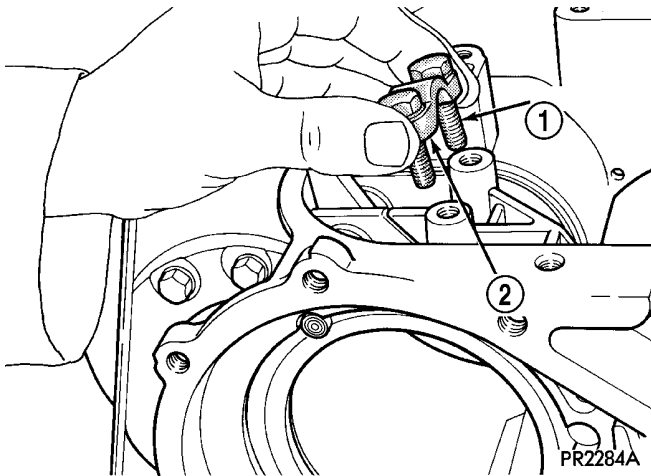


Fig. 117 Support and Bolts

- 1 - BOLT (2)
- 2 - PARKING SPRAG ROD SUPPORT

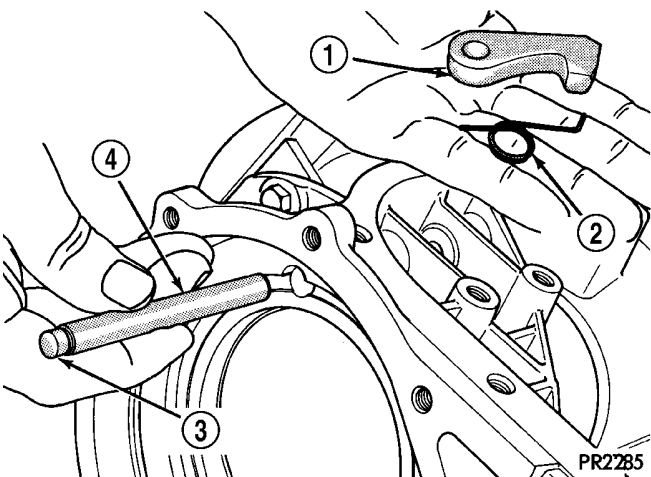


Fig. 118 Parking Pawl, Return Spring, and Pivot Shaft

- 1 - PARKING PAWL
- 2 - RETURN SPRING
- 3 - NOTE: SMALL DIAMETER TO REAR
- 4 - PIVOT SHAFT

OUTPUT SHAFT REPAIR

NOTE: Transfer shaft should be removed for repair of output shaft. Planetary gear sets must be removed to accurately check output shaft bearing turning torque.

STIRRUP AND RETAINING STRAP

NOTE: A stirrup and retaining strap (Fig. 119) is attached to the output gear. The stirrup prevents the output gear retaining nut from turning and

backing off the output shaft. The strap is used to hold the stirrup to the output gear and prevent the stirrup retaining bolts from backing out.

REMOVAL

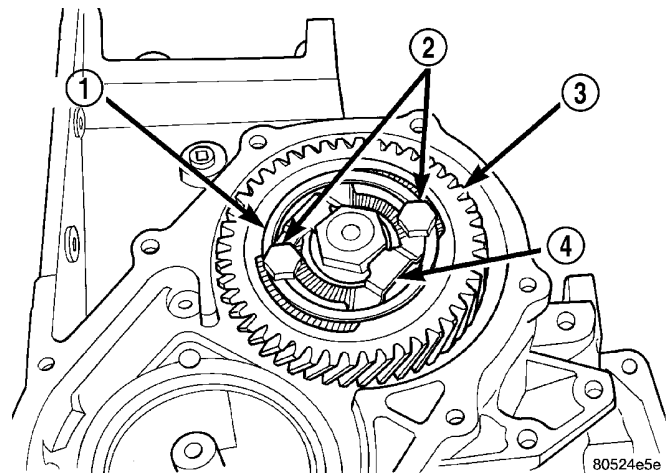


Fig. 119 Stirrup and Retaining Strap Assembly

- 1 - STRAP
- 2 - RETAINING BOLTS (2)
- 3 - OUTPUT GEAR
- 4 - STIRRUP

(1) Using a punch, bend tabs on strap flat against output gear (Fig. 120).

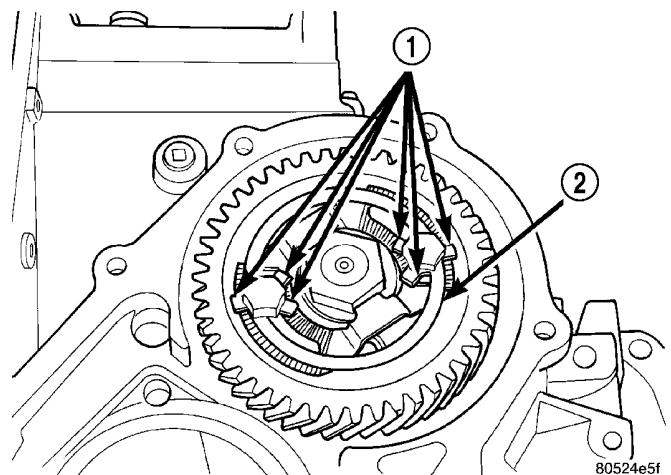


Fig. 120 Bend Strap Tabs Flat

- 1 - RETAINING TABS
- 2 - STRAP

(2) Remove bolts holding retaining strap to stirrup (Fig. 121).

(3) Remove strap from output gear and stirrup (Fig. 122).

DISASSEMBLY AND ASSEMBLY (Continued)

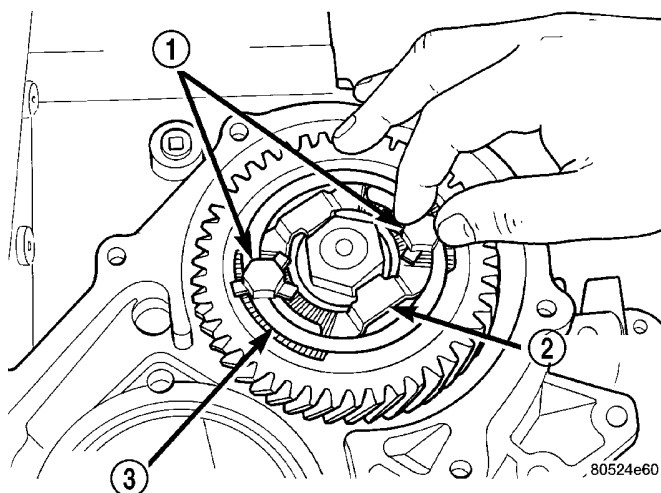


Fig. 121 Remove Strap Bolts

- 1 - RETAINING BOLTS
- 2 - STIRRUP
- 3 - STRAP

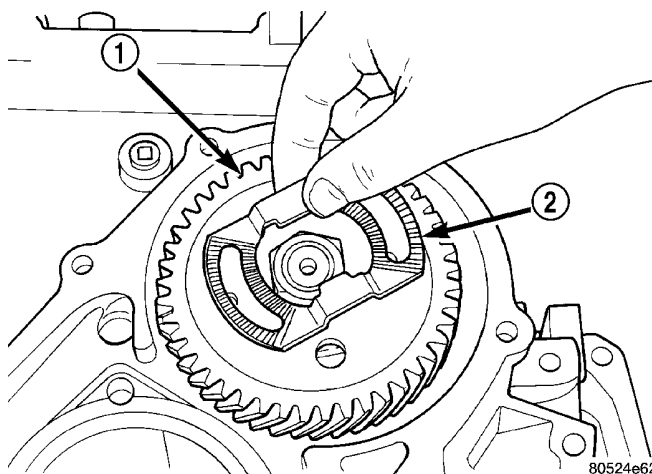


Fig. 123 Remove Stirrup From Gear

- 1 - OUTPUT GEAR
- 2 - STIRRUP

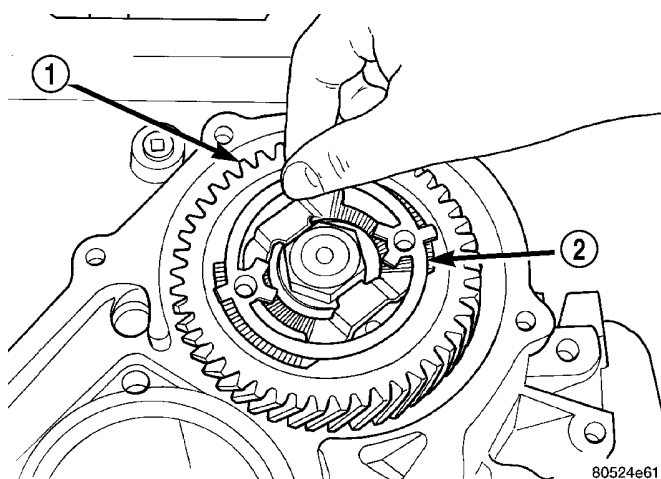


Fig. 122 Remove Strap From Stirrup and Gear

- 1 - OUTPUT GEAR
- 2 - STRAP

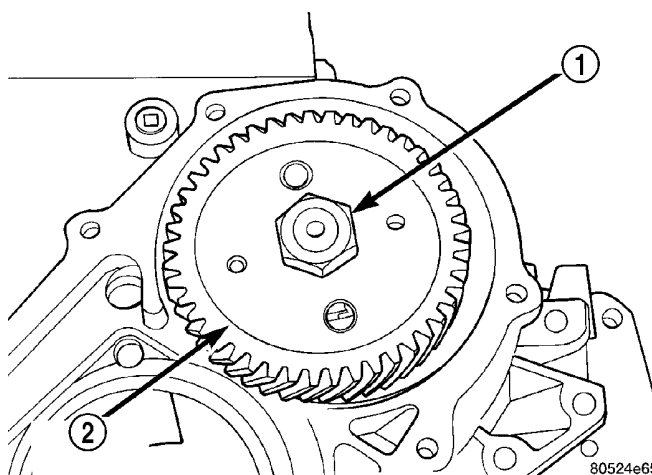


Fig. 124 Stirrup and Strap Removed From Output Gear

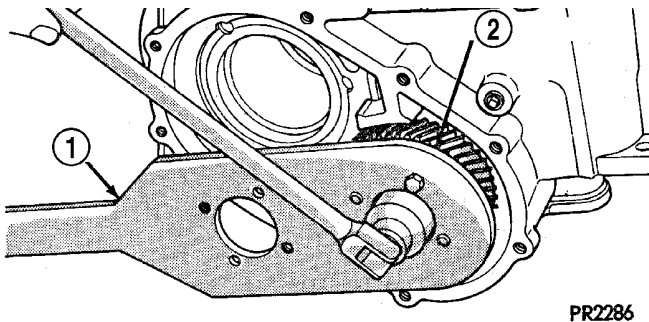
- 1 - OUTPUT GEAR RETAINING NUT
- 2 - OUTPUT GEAR

(4) Remove stirrup from output gear (Fig. 123) (Fig. 124).

DISASSEMBLY AND ASSEMBLY (Continued)

OUTPUT GEAR AND SHAFT

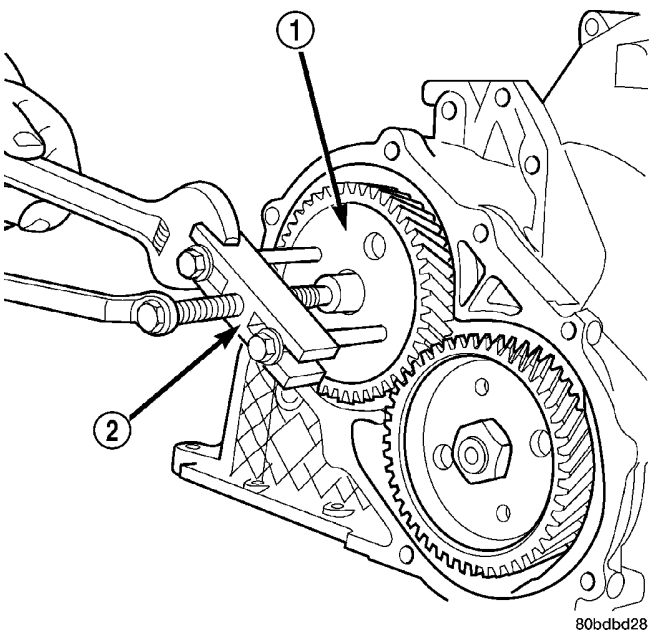
DISASSEMBLY



PR2286

Fig. 125 Remove Output Shaft Retaining Nut and Washer

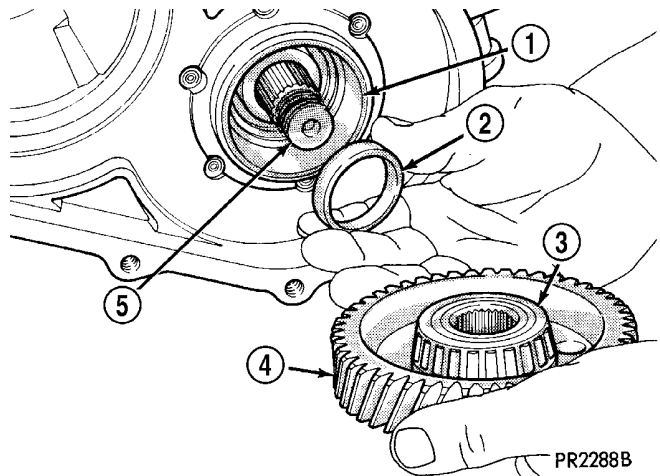
- 1 - SPECIAL TOOL L-4434
2 - OUTPUT SHAFT GEAR



80bcbd28

Fig. 126 Remove Output Shaft Gear using L-4407A

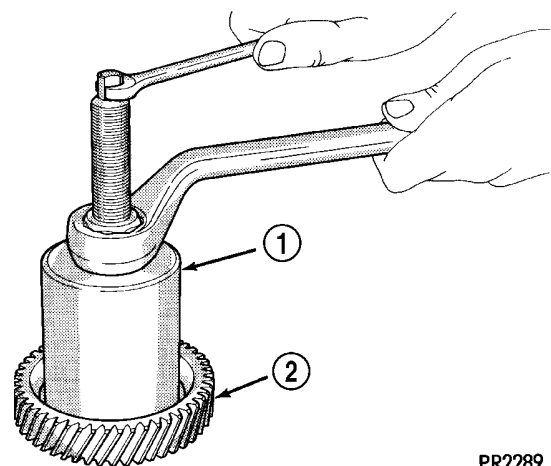
- 1 - OUTPUT GEAR
2 - TOOL L-4407A



PR2288B

Fig. 127 Output Shaft Gear and (Select) Shim

- 1 - BEARING CUP
2 - SHIM (SELECT)
3 - BEARING CONE
4 - OUTPUT SHAFT GEAR
5 - OUTPUT SHAFT



PR2289

Fig. 128 Remove Output Shaft Gear Bearing Cone

- 1 - SPECIAL TOOL L-4406-1 WITH ADAPTERS L-4406-2
2 - OUTPUT SHAFT GEAR

DISASSEMBLY AND ASSEMBLY (Continued)

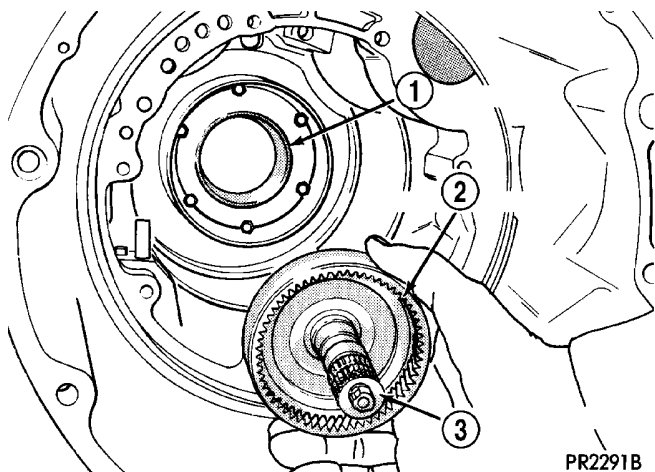


Fig. 129 Remove Output Shaft and Rear Annulus Gear Assembly

- 1 – BEARING CUP
- 2 – REAR ANNULUS GEAR
- 3 – OUTPUT SHAFT

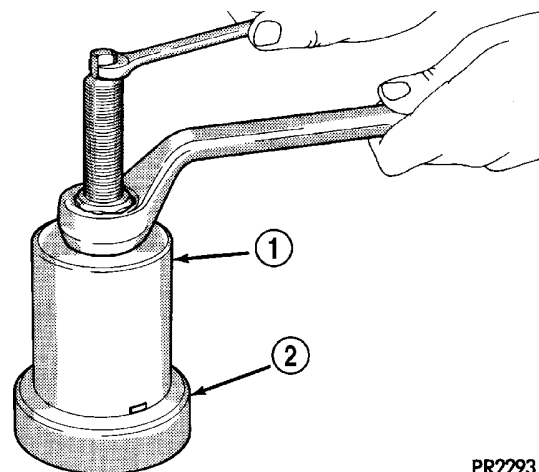


Fig. 131 Remove Rear Planetary Annulus Gear Bearing Cone

- 1 – SPECIAL TOOL L-4406-1 WITH ADAPTERS L-4406-2
- 2 – REAR PLANETARY ANNULUS GEAR

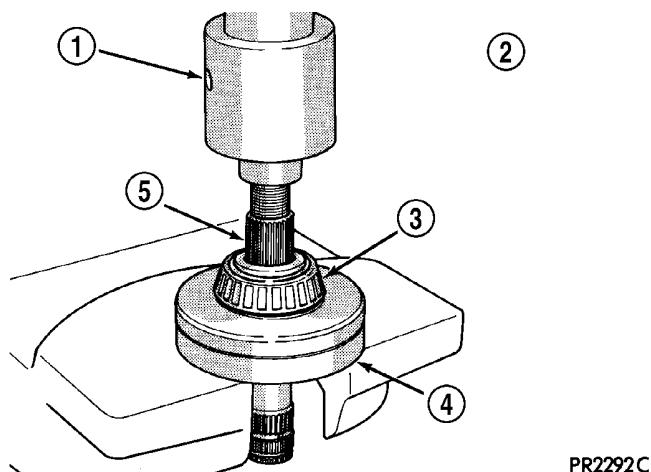


Fig. 130 Remove Output Shaft

- 1 – ARBOR PRESS RAM
- 2 – CAUTION: SUPPORT ANNULUS GEAR UNDERNEATH, NEAR GEAR CENTER.
- 3 – BEARING CONE
- 4 – REAR ANNULUS GEAR
- 5 – OUTPUT SHAFT

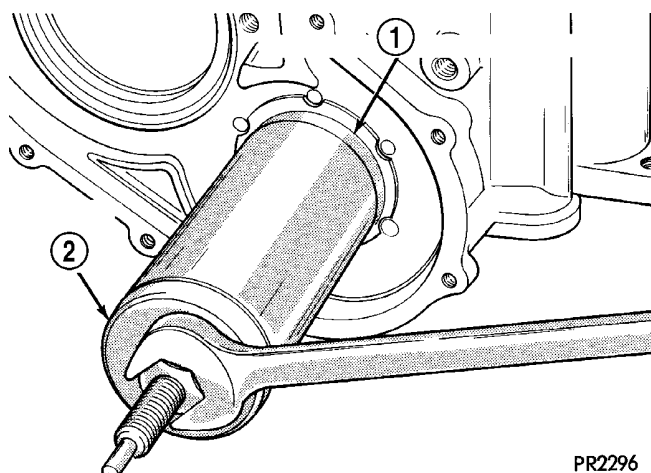


Fig. 132 Remove Output Shaft Gear Bearing Cup

- 1 – OUTPUT SHAFT GEAR BEARING CUP
- 2 – SPECIAL TOOL L-4518

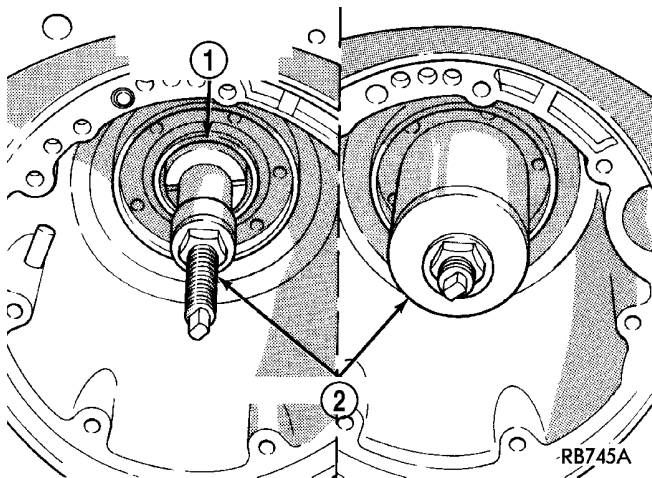


Fig. 133 Remove Rear Planetary Annulus Gear Bearing Cup

- 1 - REAR PLANETARY ANNULUS GEAR BEARING CUP
- 2 - SPECIAL TOOL L-4518

ASSEMBLY

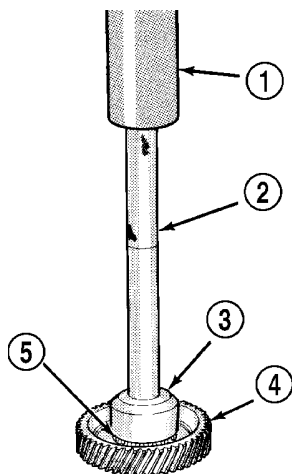


Fig. 134 Install Output Shaft Gear Bearing Cone

- 1 - PRESS
- 2 - HANDLE C-4171
- 3 - SPECIAL TOOL L-4408
- 4 - OUTPUT SHAFT GEAR
- 5 - BEARING CONE

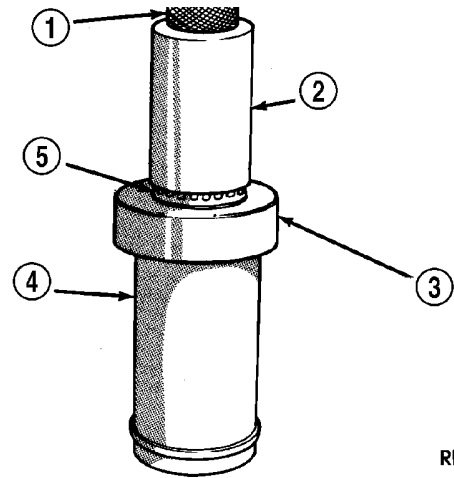


Fig. 135 Install Rear Planetary Annulus Gear Bearing Cone

- 1 - ARBOR PRESS RAM
- 2 - SPECIAL TOOL C-4637
- 3 - REAR PLANETARY ANNULUS GEAR
- 4 - CUP FROM TOOL L-4518
- 5 - BEARING CONE

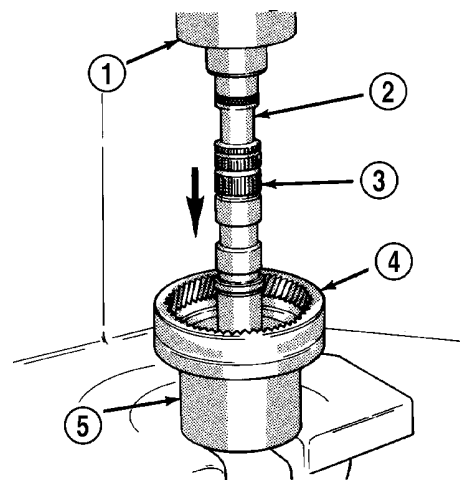


Fig. 136 Install Output Shaft into Rear Planetary Annulus Gear

- 1 - PRESS
- 2 - 1/2 INCH SOCKET
- 3 - OUTPUT SHAFT
- 4 - REAR ANNULUS GEAR
- 5 - SPACER

DISASSEMBLY AND ASSEMBLY (Continued)

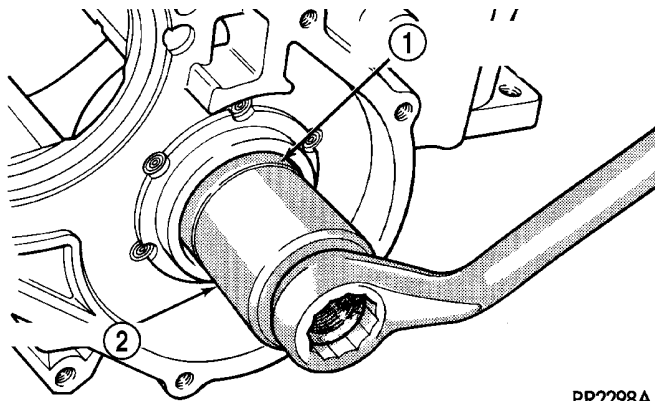


Fig. 137 Install Output Shaft Gear Bearing Cup

- 1 - OUTPUT SHAFT GEAR BEARING CUP
- 2 - SPECIAL TOOL L-4429-3

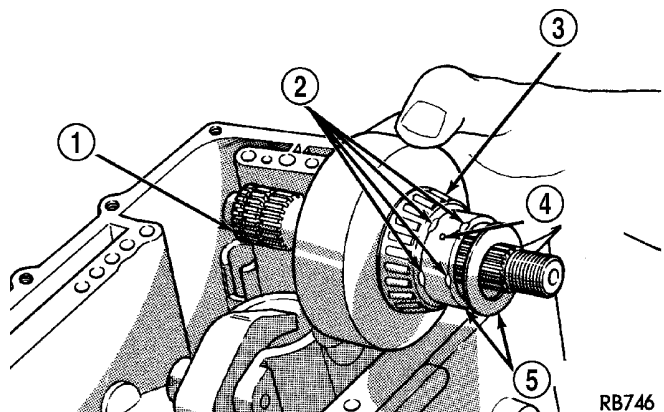


Fig. 139 Install Output Shaft Assembly

- 1 - OUTPUT SHAFT ASSEMBLY
- 2 - USE GREASE TO HOLD SHIMS IN POSITION
- 3 - BEARING CONE
- 4 - LUBRICATION HOLE
- 5 - SELECT SHIMS

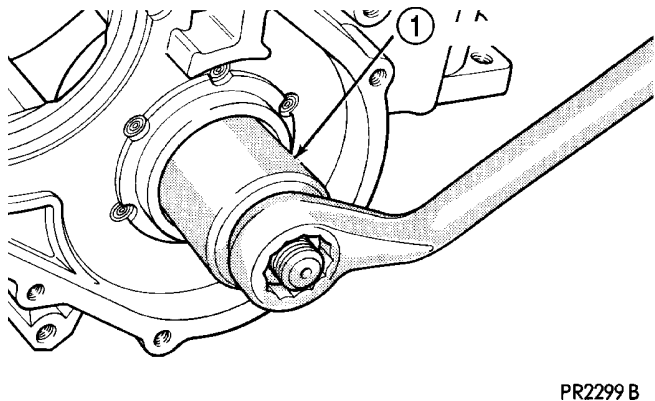


Fig. 138 Install Rear Planetary Annulus Gear Bearing Cup

- 1 - SPECIAL TOOL L-4429-3

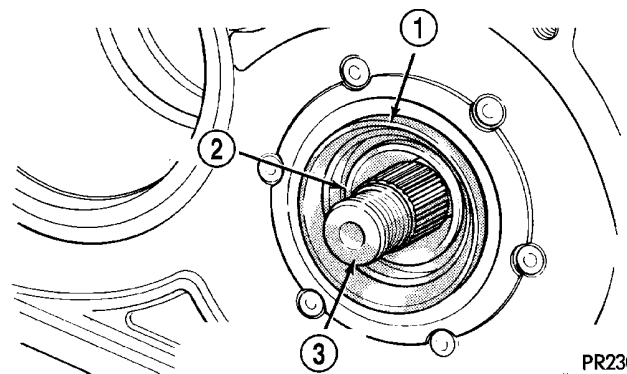


Fig. 140 Output Shaft and (Select) Shims in Position

- 1 - BEARING CUP
- 2 - (SELECT) SHIM
- 3 - OUTPUT SHAFT ASSEMBLY

DETERMINING SHIM THICKNESS

Shim thickness need be determined only if any of the following parts are replaced:

- Transaxle case
- Output shaft
- Rear planetary annulus gear
- Output shaft gear
- Rear annulus and output shaft gear bearing cones

• Overrunning clutch race cups

Refer to Bearing Adjustment Procedure at the rear of this section, to determine proper shim thickness. Check output shaft bearing turning torque, using an inch-pound torque wrench. If turning torque is 3 to 8 inch-pounds, the proper shim has been installed.

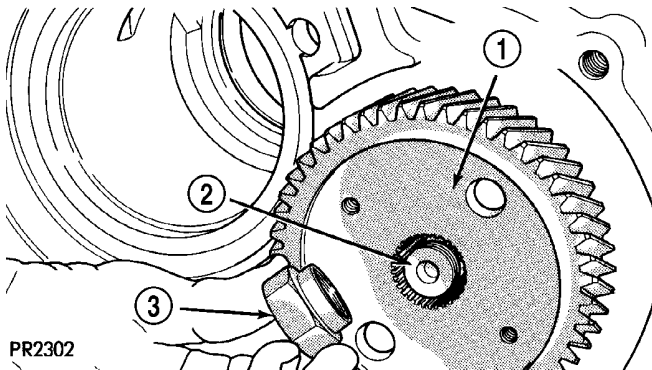


Fig. 141 Start Output Shaft Gear onto Output Shaft

- 1 - OUTPUT SHAFT GEAR
- 2 - OUTPUT SHAFT
- 3 - SPECIAL TOOL L-4439

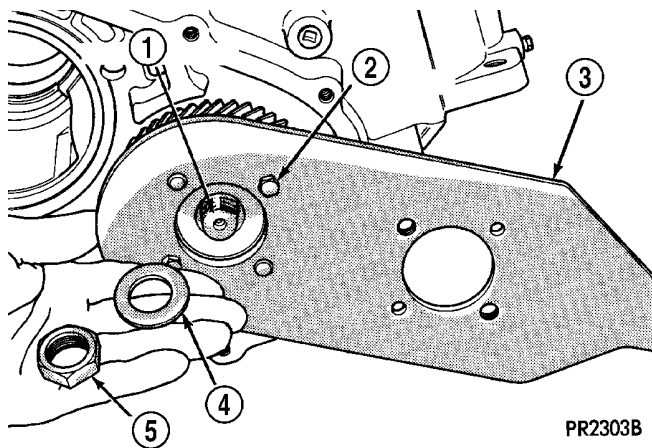


Fig. 142 Holding Output Shaft Gear

- 1 - OUTPUT SHAFT
- 2 - SCREW (2)
- 3 - SPECIAL TOOL L-4434 AND C-4658
- 4 - WASHER
- 5 - NUT

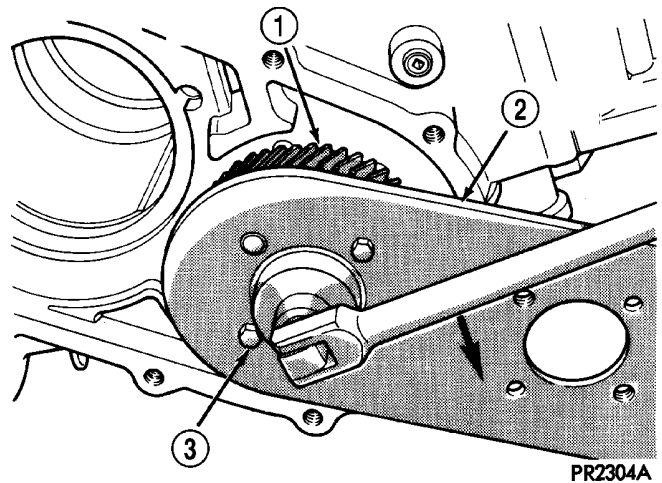


Fig. 143 Tighten Output Shaft Retaining Nut to 271 N-m (200 ft. lbs.)

- 1 - OUTPUT SHAFT GEAR
- 2 - SPECIAL TOOL L-4434 AND C-4658
- 3 - SCREW (2)

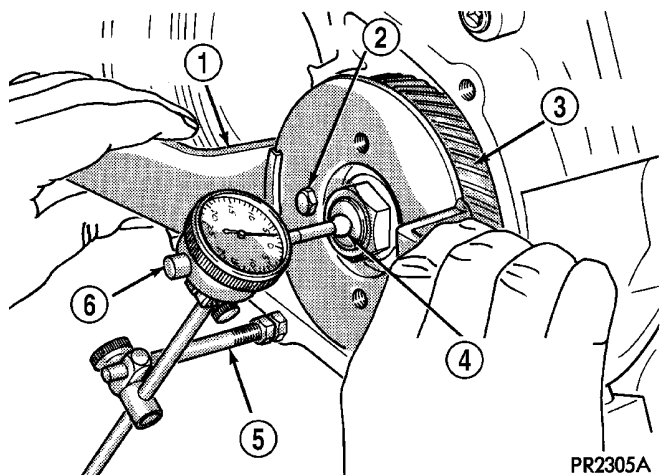


Fig. 144 Checking Output Shaft End Play

- 1 - SPECIAL TOOL L-4432 AND C-4658
- 2 - SCREW (2)
- 3 - OUTPUT SHAFT GEAR
- 4 - STEEL BALL (GREASE IN PLACE)
- 5 - SPECIAL TOOL L-4438
- 6 - DIAL INDICATOR

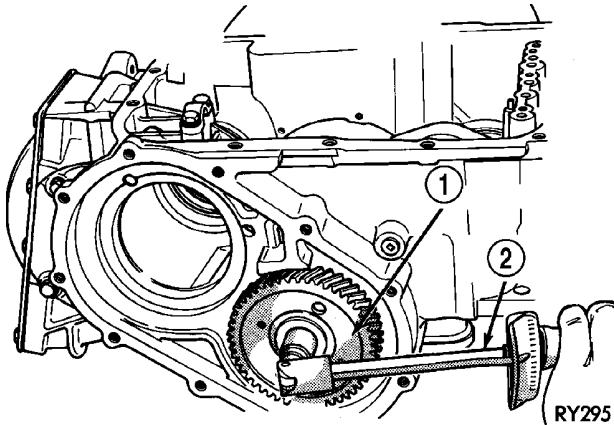


Fig. 145 Checking Bearing Turning Torque

- 1 - OUTPUT SHAFT GEAR
 2 - TORQUE WRENCH

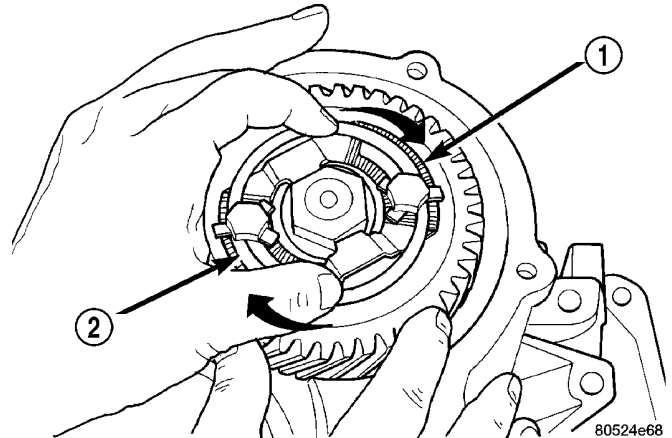


Fig. 146 Turn Stirrup Clockwise Against Flats Of Retaining Nut

- 1 - TURN STIRRUP CLOCKWISE
 2 - STRAP

STIRRUP AND RETAINING STRAP

INSTALLATION

Once bearing turning torque and shim selection has been adjusted, install stirrup and strap assembly onto output gear.

NOTE: Once the stirrup assembly is positioned onto the output gear, it is necessary to “clock” the stirrup against the flats of the output gear retaining nut.

- (1) Position the stirrup on the output gear.
- (2) Position strap.
- (3) Install retaining bolts into output gear. Finger-tighten bolts.
- (4) Turn stirrup clockwise against the flats of the output gear retaining nut (Fig. 146).
- (5) Tighten retaining bolts to 23 N·m (200 in. lbs.) (Fig. 147).
- (6) Bend tabs of strap up against “flats” of retaining bolts.

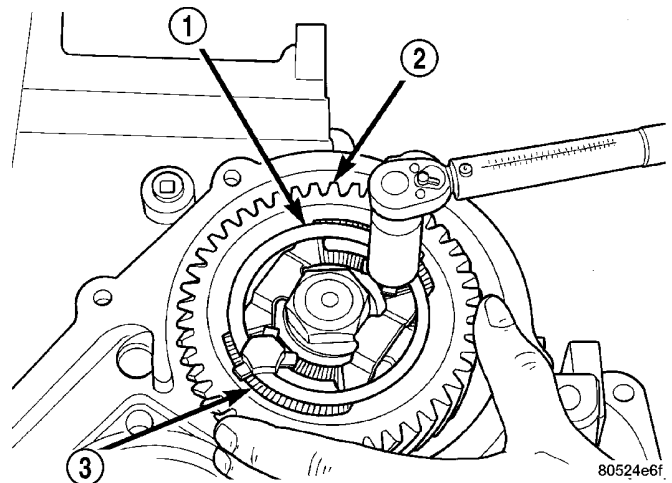
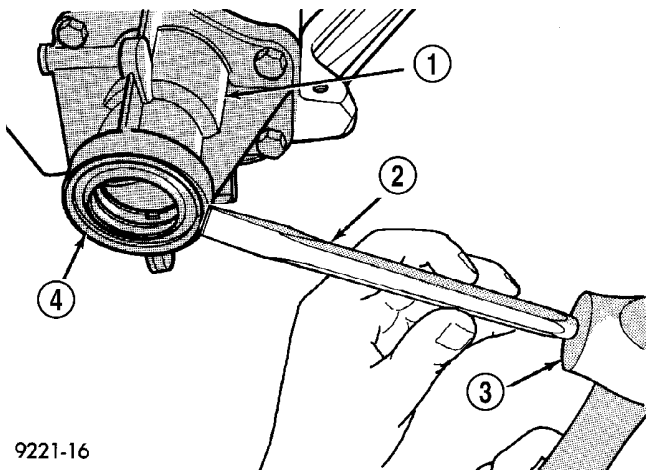


Fig. 147 Tighten Strap Retaining Nuts

- 1 - STRAP
 2 - OUTPUT GEAR
 3 - STIRRUP

DIFFERENTIAL REPAIR

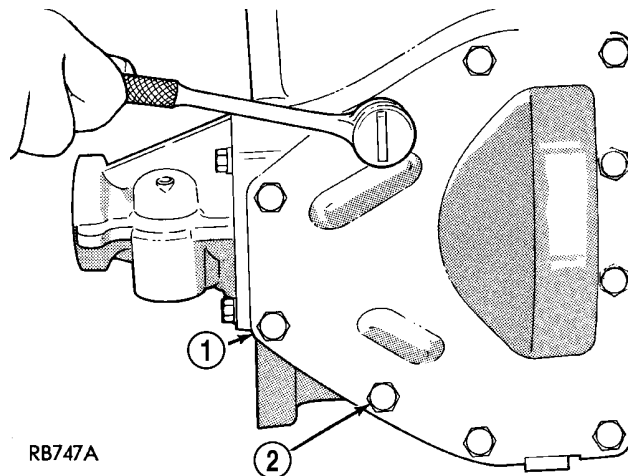
NOTE: The transfer shaft should be removed for differential repair and bearing turning torque checking.



9221-16

Fig. 148 Remove Extension Seal

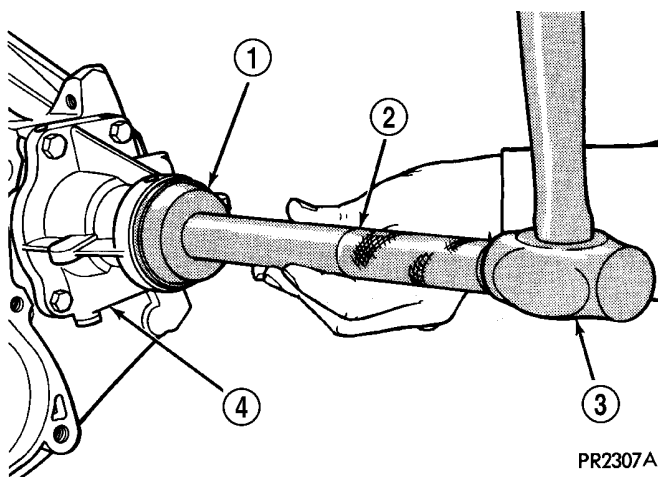
- 1 - EXTENSION HOUSING
- 2 - SMALL CHISEL
- 3 - HAMMER
- 4 - OIL SEAL



RB747A

Fig. 150 Differential Cover Bolts

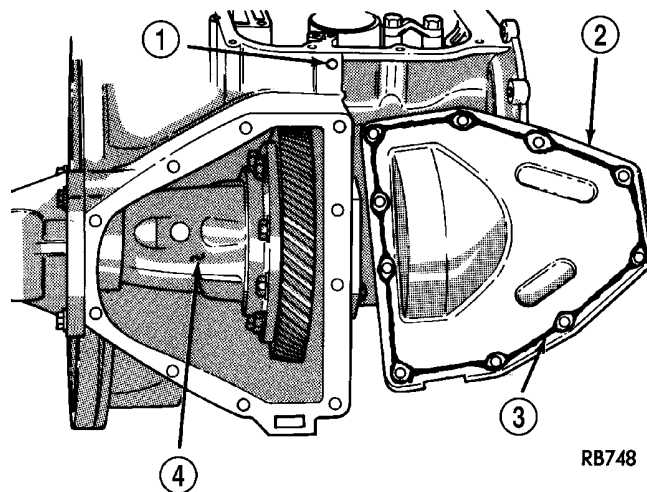
- 1 - DIFFERENTIAL COVER
- 2 - DIFFERENTIAL COVER BOLT



PR2307A

Fig. 149 Install New Seal into Extension

- 1 - SPECIAL TOOL L-4520 (INVERTED)
- 2 - HANDLE C-4171
- 3 - HAMMER
- 4 - EXTENSION HOUSING



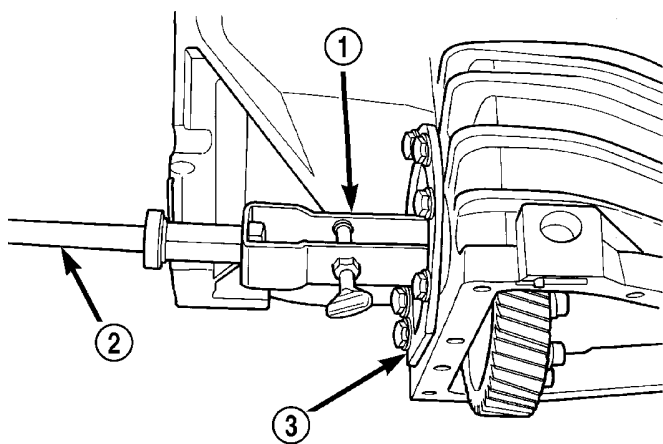
RB748

Fig. 151 Remove or Install Differential Cover

- 1 - GOVERNOR PRESSURE PLUG
- 2 - DIFFERENTIAL COVER
- 3 - 1/8 INCH BEAD OF R T V SEALANT
- 4 - DIFFERENTIAL ASSEMBLY

DISASSEMBLY AND ASSEMBLY (Continued)

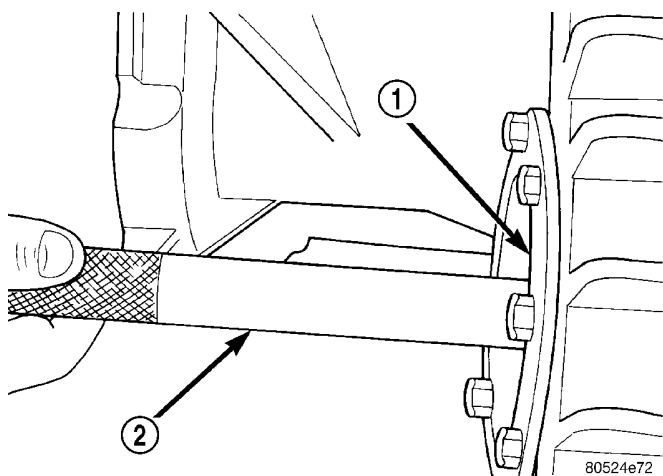
NOTE: Use Mopar® RTV sealant, or equivalent, when installing differential cover.



80524e71

Fig. 152 Remove Bearing Retainer Axle Seal

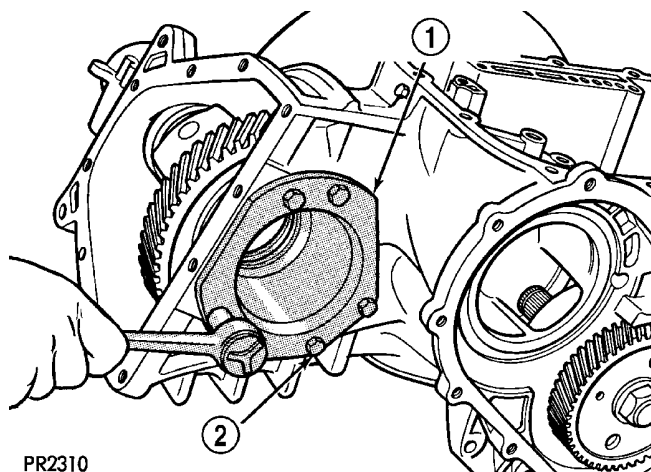
- 1 - SPECIAL TOOL 7794A
- 2 - SPECIAL TOOL C-637
- 3 - DIFFERENTIAL BEARING RETAINER



80524e72

Fig. 153 Install Bearing Retainer Axle Seal

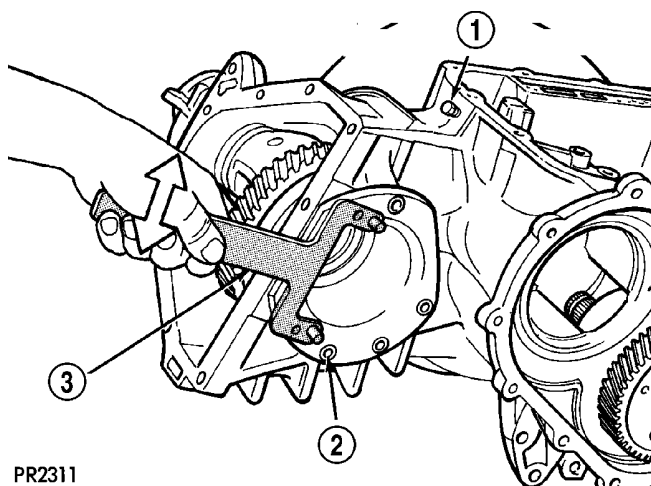
- 1 - SPECIAL TOOL L-4520
- 2 - SPECIAL TOOL C-4171



PR2310

Fig. 154 Differential Bearing Retainer Bolts

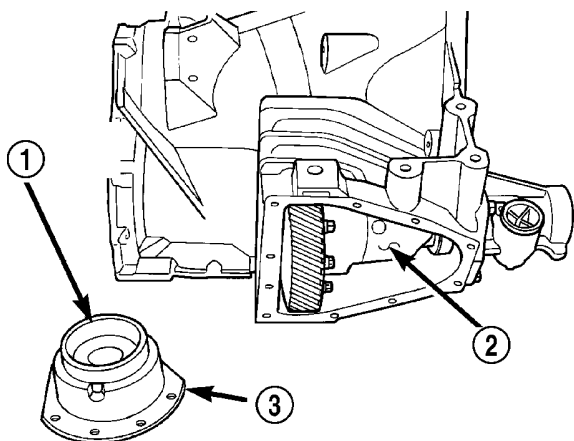
- 1 - DIFFERENTIAL BEARING RETAINER
- 2 - DIFFERENTIAL BEARING RETAINER BOLTS (6)



PR2311

Fig. 155 Remove or Install Bearing Retainer

- 1 - GOVERNOR PRESSURE PLUG
- 2 - DIFFERENTIAL BEARING RETAINER
- 3 - SPECIAL TOOL L-4435



80524e70

Fig. 156 Differential Bearing Retainer (Typical)

- 1 - DIFFERENTIAL BEARING CUP
- 2 - DIFFERENTIAL
- 3 - DIFFERENTIAL BEARING RETAINER

NOTE: Use Mopar® RTV sealant, or equivalent, when installing differential bearing retainer.

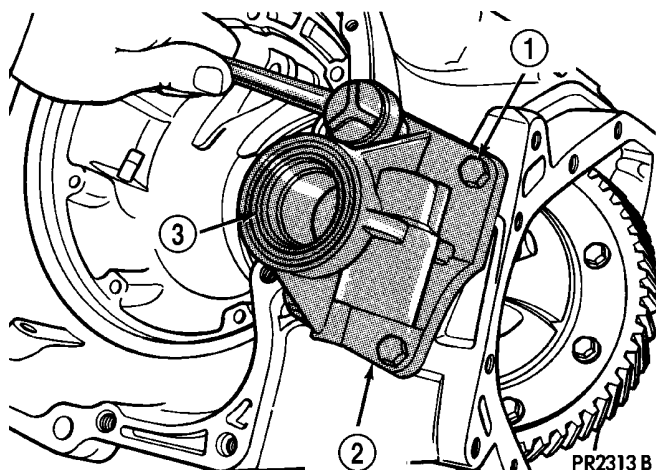


Fig. 157 Extension Bolts

- 1 - EXTENSION HOUSING BOLTS (4)
- 2 - EXTENSION HOUSING
- 3 - OIL SEAL

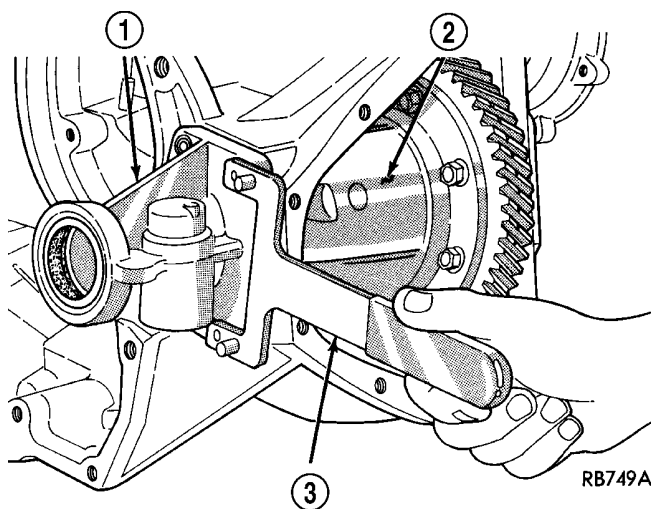


Fig. 158 Remove or Install Extension Housing

- 1 - EXTENSION HOUSING
- 2 - DIFFERENTIAL ASSEMBLY
- 3 - SPECIAL TOOL L-4435

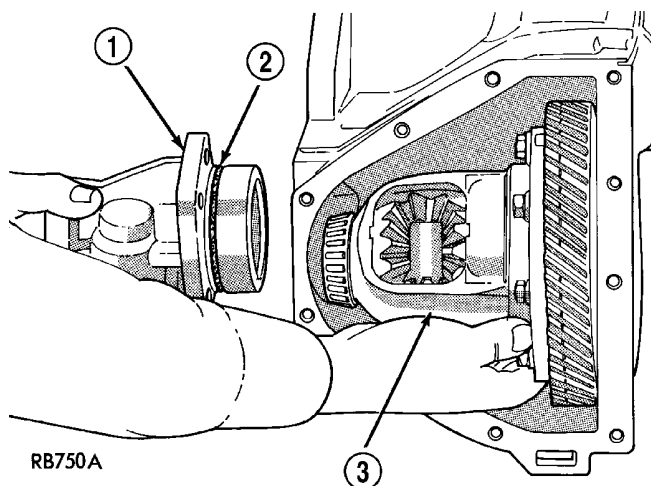


Fig. 159 Differential and Extension

- 1 - EXTENSION HOUSING
- 2 - "O" RING
- 3 - DIFFERENTIAL ASSEMBLY

DISASSEMBLY AND ASSEMBLY (Continued)

WARNING: HOLD ONTO DIFFERENTIAL ASSEMBLY TO PREVENT IT FROM ROLLING OUT OF HOUSING.

Use Mopar® Silicone Rubber Adhesive Sealant, or equivalent, when installing extension housing.

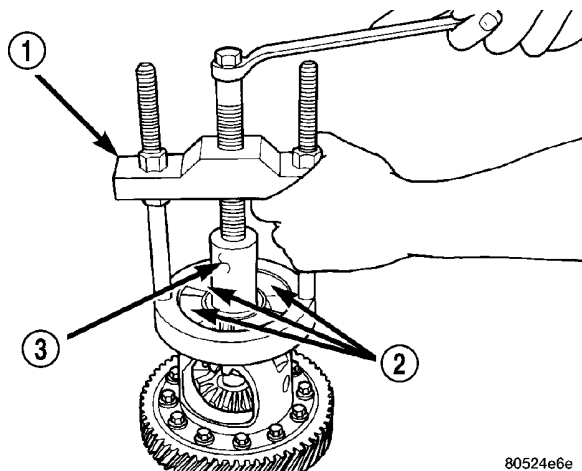


Fig. 160 Remove Differential Bearing Cone (Extension Housing Side)

- 1 – SPECIAL TOOL C-293
- 2 – SPECIAL TOOL C-293-36
- 3 – SPECIAL TOOL C-293-3

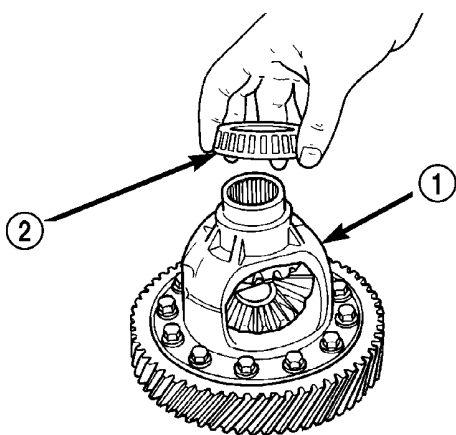


Fig. 161 Position Bearing Cone Onto Differential

- 1 – DIFFERENTIAL ASSEMBLY
- 2 – DIFFERENTIAL BEARING

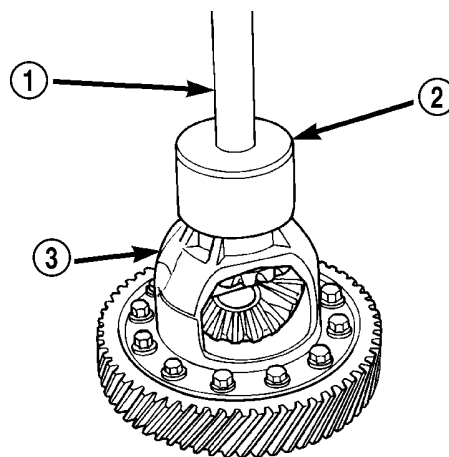


Fig. 162 Install Differential Bearing Cone

- 1 – SPECIAL TOOL C-4171
- 2 – SPECIAL TOOL 6536
- 3 – DIFFERENTIAL ASSEMBLY

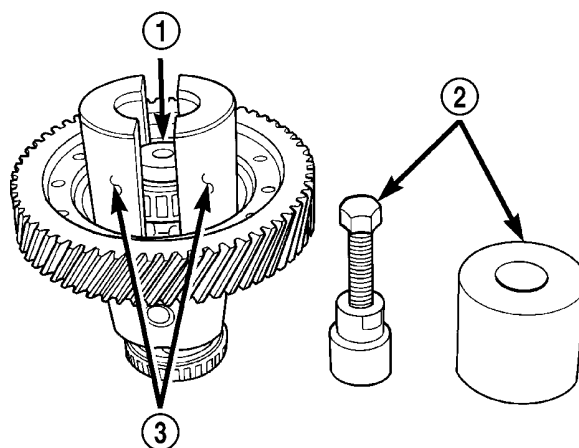
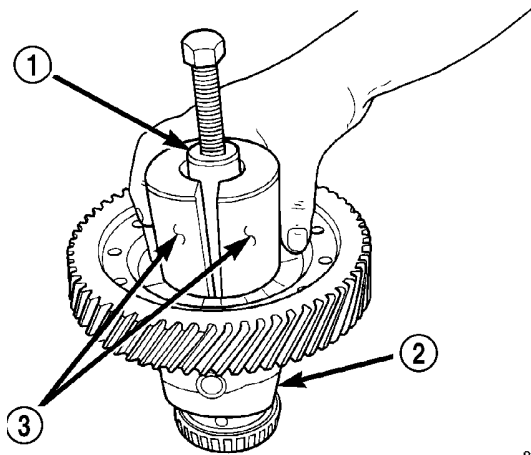


Fig. 163 Position Button and Collets Onto Differential and Bearing (Ring Gear Side)

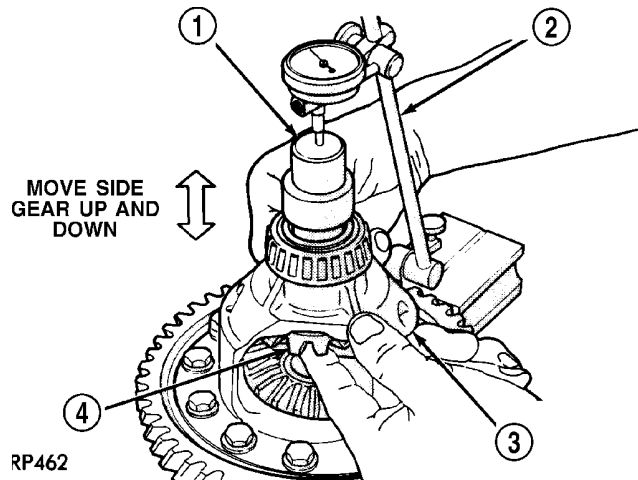
- 1 – SPECIAL TOOL L-4539-2
- 2 – SPECIAL TOOL 5048
- 3 – SPECIAL TOOL 5048-4



80524e6c

Fig. 164 Position Tool 5048 Over Button and Collets at Differential Bearing

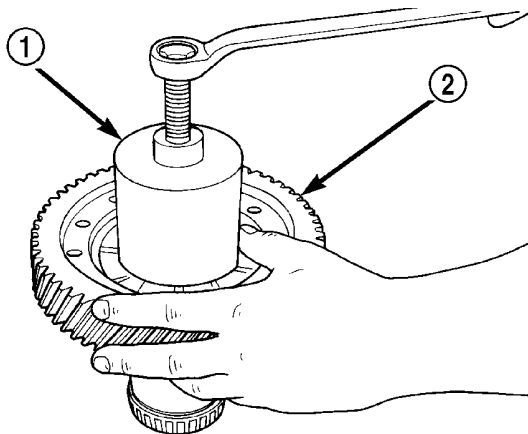
- 1 - SPECIAL TOOL 5048
- 2 - DIFFERENTIAL
- 3 - SPECIAL TOOL 5048-4



RP462

Fig. 166 Checking Side Gear End Play

- 1 - SPECIAL TOOL C-4996 (NOTE POSITION)
- 2 - DIAL INDICATOR SET
- 3 - DIFFERENTIAL ASSEMBLY
- 4 - SIDE GEAR



80524e6d

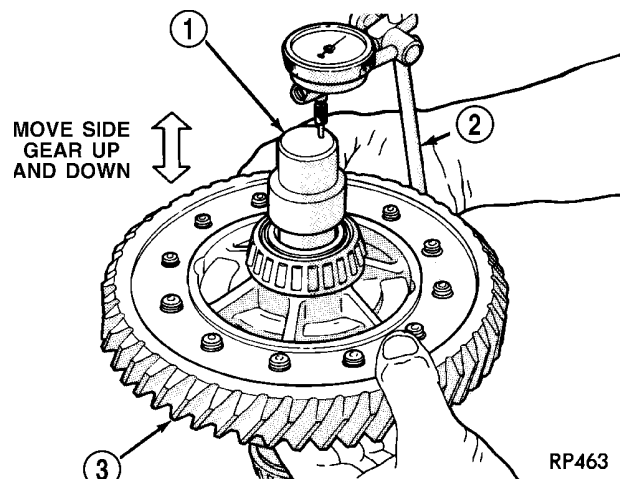
Fig. 165 Remove Differential Bearing Cone

- 1 - SPECIAL TOOL 5048
- 2 - RING GEAR

To install the differential bearing cup and cone on the ring gear side, use Special Tool 5052, and Special Tool C-4171.

NOTE: The differential is serviced as an assembly. The only parts that are serviceable within the differential are the differential bearing cups and cones. If any other part fails within the differential, you must replace the differential assembly along with the transfer shaft.

CAUTION: Side gear end play must be BETWEEN 0.001 to 0.013 inch.

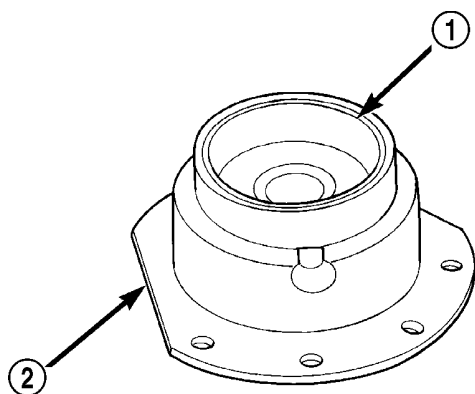


RP463

Fig. 167 Checking Side Gear End Play (Typical)

- 1 - SPECIAL TOOL C-4996 (NOTE POSITION)
- 2 - DIAL INDICATOR SET
- 3 - DIFFERENTIAL ASSEMBLY

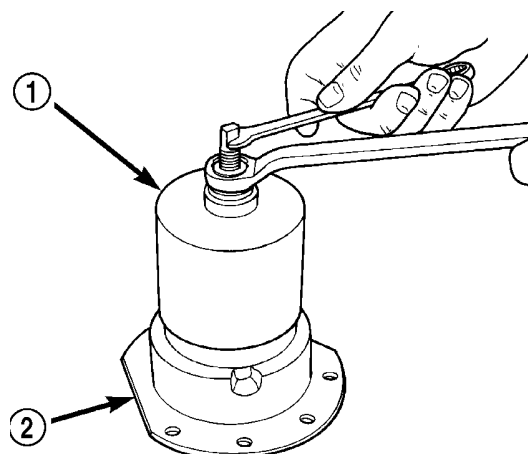
To remove the differential bearing cup from the extension housing/adapter side, use Special Tool 6062A, Remover. To install the differential bearing cup on the extension housing/adapter side, use Special Tool 6536, Driver and Special Tool C-4171, Handle.



80524e73

Fig. 168 Differential Bearing Retainer

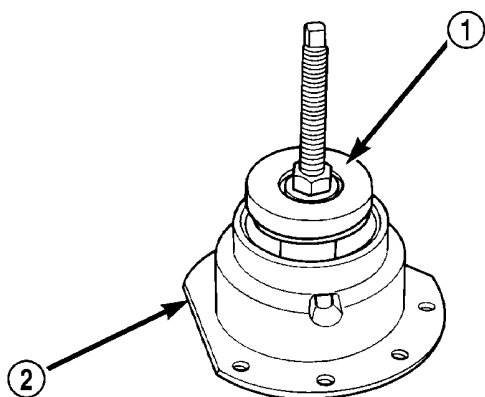
- 1 – DIFFERENTIAL BEARING CUP
2 – DIFFERENTIAL BEARING RETAINER



80524e75

Fig. 170 Remove Bearing Cup

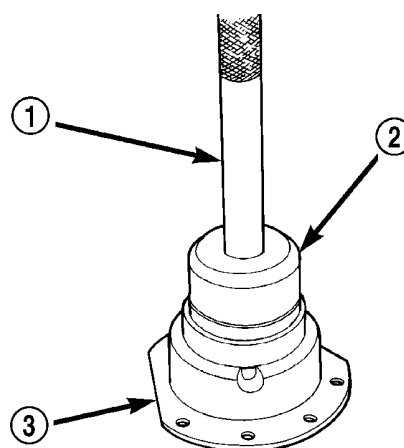
- 1 – SPECIAL TOOL 6062A
2 – DIFFERENTIAL BEARING RETAINER



80524e74

Fig. 169 Position Bearing Cup Remover Tool in Retainer

- 1 – SPECIAL TOOL 6062A
2 – DIFFERENTIAL BEARING RETAINER



80524e76

Fig. 171 Install Bearing Cup

- 1 – SPECIAL TOOL C-4171
2 – SPECIAL TOOL 5052
3 – DIFFERENTIAL BEARING RETAINER

DETERMINING SHIM THICKNESS

Shim thickness need be determined only if any of the following parts are replaced:

- Transaxle case
- Differential carrier
- Differential bearing retainer
- Extension housing
- Differential bearing cups and cones

Refer to Bearing Adjustment Procedure in rear of this section to determine proper shim thickness.

CLEANING AND INSPECTION

VALVE BODY

Allow all parts to soak a few minutes in a suitable clean solvent. Wash thoroughly and blow dry with compressed air. Make sure all passages are clean and free from obstructions.

Inspect manual and throttle valve operating levers and shafts for being bent, worn or loose. If a lever is loose on its shaft, it should be replaced. Do not attempt to straighten bent levers.

Inspect all mating surfaces for burrs, nicks and scratches. Minor blemishes may be removed with crocus cloth, using only a very light pressure. Using a straightedge, inspect all mating surfaces for warpage or distortion. Slight distortion may be corrected, using a surface plate. Make sure all metering holes in steel plate are open. Using a pen light, inspect bores in valve body for scores, scratches, pits and irregularities.

Inspect all valve springs for distortion and collapsed coils. Inspect all valves and plugs for burrs, nicks, and scores. Small nicks and scores may be removed with crocus cloth, providing extreme care is taken not to round off sharp edges. The sharpness of these edges is vitally important. It prevents foreign matter from lodging between valve and valve body. This reduces the possibility of sticking. Inspect all valves and plugs for freedom of operation in valve body bores.

When bores, valves, and plugs are clean and dry, the valves and plugs should fall freely in the bores. The valve body bores do not change its dimensions with use. Therefore, a valve body that was functioning properly when vehicle was new, will operate correctly if it is properly and thoroughly cleaned. There is no need to replace valve body unless it is damaged in handling.

ADJUSTMENTS

GEARSHIFT CABLE ADJUSTMENT

Lift and rotate the gearshift hand lever into the park (P) gate position and remove the ignition key. This confirms the shift lever is in the gated park (P) position.

After confirming the park gate position, turn the ignition switch. If the starter will operate, the park gate position is correct. Move the shift lever into the neutral (N) position. If the starter will operate in this position, the linkage is properly adjusted. If the starter fails to operate in either position, linkage adjustment is required.

(1) Park the vehicle on level ground and set the parking brake.

(2) Place the gearshift lever in park (P) gate position and remove key.

(3) Loosen the cable adjustment screw at the transaxle operating lever (Fig. 172).

(4) Pull the transaxle operating lever fully forward to the park detent position.

(5) Release the park brake, then rock the vehicle to assure it is in park lock. Reset the park brake.

(6) Tighten the cable adjustment screw to 8 N-m (70 in. lbs.). Gearshift cable should now be properly adjusted.

(7) Verify PRNDL indicator still displays the corresponding gear completely. If not, readjustment of PRNDL may be required.

(8) Check adjustment by using the preceding procedure.

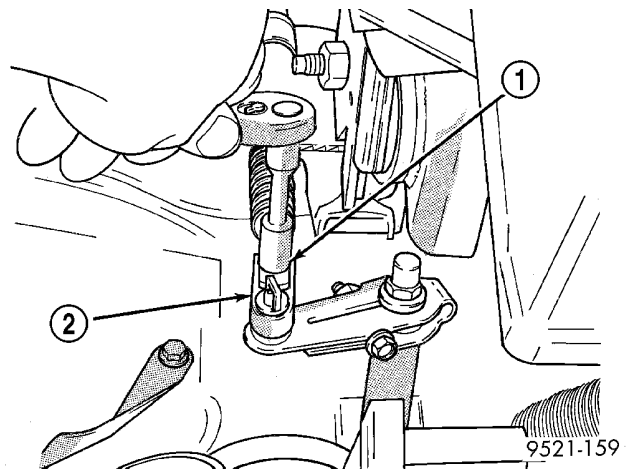


Fig. 172 Gearshift Cable Adjustment

1 - SHIFT CABLE ADJUSTMENT

2 - SHIFT CABLE

THROTTLE PRESSURE LINKAGE ADJUSTMENT

The throttle pressure rod adjustment is very important to proper transaxle operation. This adjustment positions a valve which controls shift speed, shift quality, and part throttle downshift sensitivity. If the setting is too short, early shifts and slippage between shifts may occur. If the setting is too long, shifts may be delayed and part throttle downshifts may be very sensitive.

With engine at operating temperature, adjust idle speed of engine using a tachometer. Refer to Group 14, Fuel System for idle speed Specifications and adjustment.

ROD ADJUSTMENT PROCEDURE

(1) Perform transaxle throttle pressure adjustment while engine is at normal operating temperature.

(2) Loosen adjustment swivel lock screw.

(3) To insure proper adjustment, swivel must be free to slide along flat end of throttle rod. Disassem-

ADJUSTMENTS (Continued)

ble and clean or repair parts to assure free action, if necessary.

(4) Hold transaxle throttle lever firmly toward engine, against its internal stop. Tighten swivel lock screw to 11 N·m (100 in. lbs.).

(5) The adjustment is finished and linkage backlash was automatically removed by the preload spring.

(6) If lubrication is required see Group 0, Lubrication.

BAND ADJUSTMENT

KICKDOWN BAND (FRONT)

The kickdown band adjusting screw is located on left side (top front) of the transaxle case.

(1) Loosen locknut and back off nut approximately five turns. Test adjusting screw for free turning in the transaxle case.

(2) Using wrench, tighten adjusting screw to 8 N·m (72 in. lbs.).

(3) Back off adjusting screw the number of turns listed in Specifications. Hold adjusting screw in this position and tighten locknut to 47 N·m (35ft. lbs.).

LOW/REVERSE BAND (REAR)

To adjust low-reverse band, proceed as follows:

(1) Loosen and back off locknut approximately 5 turns.

(2) Using an inch-pound torque wrench, tighten adjusting screw to 5 N·m (41 in. lbs.) true torque.

(3) Back off adjusting screw the number of turns listed under Specifications. This chart is located at the rear of this section.

(4) Tighten locknut to 14 N·m (10 ft. lbs.).

HYDRAULIC CONTROL PRESSURE ADJUSTMENTS

LINE PRESSURE

An incorrect throttle pressure setting will cause incorrect line pressure readings even though line pressure adjustment is correct. Always inspect and correct throttle pressure adjustment before adjusting the line pressure.

The approximate adjustment for line pressure is 1-5/16 inches, measured from valve body to inner edge of adjusting nut. However, due to manufacturing tolerances, the adjustment can be varied to obtain specified line pressure.

The adjusting screw may be turned with an Allen wrench. One complete turn of adjusting screw changes closed throttle line pressure approximately 1-2/3 psi. Turning adjusting screw counterclockwise increases pressure, and clockwise decreases pressure.

THROTTLE PRESSURE

Throttle pressures cannot be tested accurately; therefore, the adjustment should be measured if a malfunction is evident.

(1) Insert gauge pin of Tool C-3763 between the throttle lever cam and kickdown valve.

(2) By pushing in on tool, compress kickdown valve against its spring so throttle valve is completely bottomed inside the valve body.

(3) While compressing spring, turn throttle lever stop screw with adapter C-4553. Turn until head of screw touches throttle lever tang, with throttle lever cam touching tool and throttle valve bottomed. Be sure adjustment is made with spring fully compressed and valve bottomed in the valve body.

BEARING ADJUSTMENT PROCEDURES

(1) Take extreme care when removing and installing bearing cups and cones. Use only an arbor press for installation, as a hammer may not properly align the bearing cup or cone. Burrs or nicks on the bearing seat will give a false end play reading, while gauging for proper shims. Improperly seated bearing cup and cones are subject to low-mileage failure.

(2) Bearing cups and cones should be replaced if they show signs of pitting or heat distress.

(3) If distress is seen on either the cup or bearing rollers, both cup and cone must be replaced.

NOTE: Bearing end play and drag torque specifications must be maintained to avoid premature bearing failures.

(4) Used (original) bearing may lose up to 50 percent of the original drag torque after break-in.

NOTE: All bearing adjustments must be made with no other component interference or gear intermesh, except the transfer gear bearing.

(5) Refer to the conversion chart in specifications to convert inches to millimeter measurements. Refer to bearing shim chart for proper shim thicknesses.

OUTPUT SHAFT BEARING

(1) With output shaft gear removed, install a 13.65 mm (.537 inch) and a 1.34 mm (.053 inch) gauging shims on the planetary rear annulus gear hub using grease to hold the shims in place. The 13.65 mm shim has a larger inside diameter and must be installed over the output shaft first. The 1.34 mm shim pilots on the output shaft.

(2) Install output shaft gear and bearing assembly, torque to 271 N·m (200 ft. lbs.).

(3) To measure bearing end play:

(4) Attach Tool L-4432 to the output shaft gear.

ADJUSTMENTS (Continued)

(5) Mount a steel ball with grease into the end of the output shaft.

(6) Push and pull the gear while rotating back and forth to insure seating of the bearing rollers.

(7) Using a dial indicator, mounted to the transaxle case, measure output shaft end play.

(8) Once bearing end play has been determined, refer to the output shaft bearing shim chart.

(9) The 12.65 mm (.498 inch), 13.15 mm (.518 inch) or 13.65 mm (.537 inch) shims are always installed first. These shims have lubrication slots which are necessary for proper bearing lubrication.

(10) Shims thinner than 12.65 mm listed in the chart are common to both the transfer shaft and output shaft bearings.

(11) Use Tool L-4434 to remove the retaining nut and washer. To remove the output shaft gear use Tool L-4407.

(12) Remove the two gauging shims and install the proper shim combination, making sure to install the 12.65, 13.15, or 13.65 mm shim first. Use grease to hold the shims in place. Install the output shaft gear and bearing assembly.

(13) Install the retaining nut and washer and torque to 271 N·m (200 ft. lbs.).

(14) Using an inch-pound torque wrench, check the turning torque. The torque should be between 3 and 8 inch-pounds.

(15) If the turning torque is too high, install a .05mm (.002 inch) thicker shim. If the turning torque is too low, install a .05 mm (.002 inch) thinner shim. Repeat until the proper turning torque is 3 to 8 inch pounds.

DIFFERENTIAL BEARING

(1) Position the transaxle assembly vertically on the support stand, differential bearing retainer side up.

(2) Install Tool L-4436A into the differential and onto the pinion mate shaft.

(3) Rotate the differential at least one full revolution to ensure the tapered roller bearings are fully seated.

(4) Using Tool L-4436A and an inch-pound torque wrench, check the turning torque of the differential. The turning torque should be between 5 and 18 inch-pounds.

(5) If the turning torque is within specifications, remove tools. Setup is complete.

(6) If turning torque is not within specifications proceed with the following steps.

(a) Remove differential bearing retainer from the transaxle case.

(b) Remove the bearing cup from the differential bearing retainer using Tool 6062A.

End Play (with 13.65 mm and 1.34 mm gauging shims installed)		Required Shim Combination	Total Thickness	
mm	inch		mm	inch
.0	.0	13.65 + 1.34	14.99	.590
.05	.002	13.65 + 1.24	14.89	.586
.10	.004	13.65 + 1.19	14.84	.584
.15	.006	13.65 + 1.14	14.79	.582
.20	.008	13.65 + 1.09	14.74	.580
.25	.010	13.65 + 1.04	14.69	.578
.30	.012	13.65 + .99	14.64	.576
.35	.014	13.65 + .94	14.59	.574
.40	.016	13.15 + 1.39	14.54	.572
.45	.018	13.15 + 1.34	14.49	.570
.50	.020	13.15 + 1.29	14.44	.568
.55	.022	13.15 + 1.24	14.39	.566
.60	.024	13.15 + 1.19	14.34	.564
.65	.026	13.15 + 1.14	14.29	.562
.70	.028	13.15 + 1.09	14.24	.560
.75	.030	13.15 + 1.04	14.19	.558
.80	.032	13.15 + .99	14.14	.556
.85	.034	13.15 + .94	14.09	.554
.90	.036	12.65 + 1.39	14.04	.552
.95	.038	12.65 + 1.34	13.99	.550
1.00	.040	12.65 + 1.29	13.94	.548
1.05	.042	12.65 + 1.24	13.89	.547
1.10	.044	12.65 + 1.19	13.84	.545
1.15	.046	12.65 + 1.14	13.79	.543
1.20	.048	12.65 + 1.09	13.74	.541
1.25	.049	12.65 + 1.04	13.69	.539
1.30	.051	12.65 + .99	13.64	.537
1.35	.053	12.65 + .94	13.59	.535

OUTPUT SHAFT BEARING SHIM CHART

(c) Remove the existing shim from under the cup.

(d) Measure the existing shim.

ADJUSTMENTS (Continued)

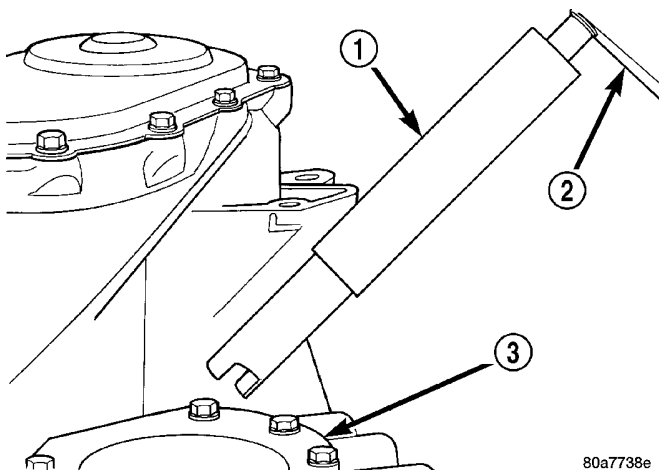


Fig. 173 Tool L-4436 and Torque Wrench

- 1 – SPECIAL TOOL L-4436-A
- 2 – TORQUE WRENCH
- 3 – DIFFERENTIAL BEARING RETAINER

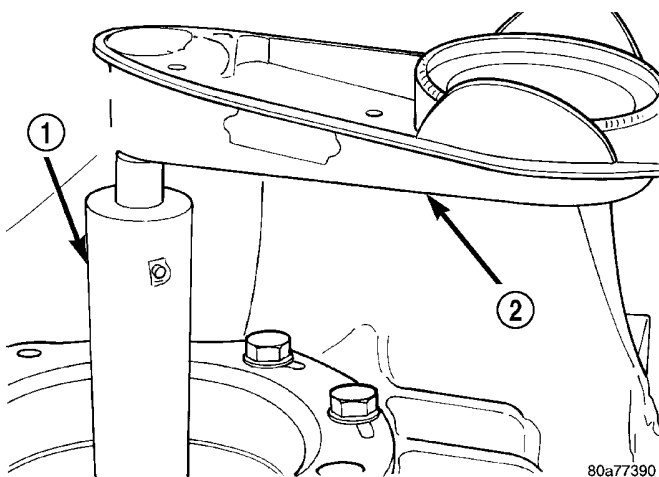


Fig. 174 Checking Differential Bearings Turning Torque

- 1 – SPECIAL TOOL L-4436-A
- 2 – TORQUE WRENCH

NOTE: If the turning torque was too high when measured, install a.05 mm (.002 inch) thinner shim. If the turning torque is was too low, install a.05 mm (.002 inch) thicker shim. Repeat until 5 to 18 inch-pounds turning torque is obtained.

Oil Baffle is not required when making shim selection.

(e) Install the proper shim under the bearing cup. Make sure the oil baffle is installed properly in the bearing retainer, below the bearing shim and cup.

(f) Install the differential bearing retainer using Tool 5052 and C-4171. Seal the retainer to the

housing with MOPAR® Adhesive Sealant and torque bolts to 28 N·m (250 in. lbs.).

DIFFERENTIAL BEARING SHIM CHART

SHIM THICKNESS	
MM	INCH
.980	0.0386
1.02	0.0402
1.06	0.0418
1.10	0.0434
1.14	0.0449
1.18	0.0465
1.22	0.0481
1.26	0.0497
1.30	0.0512
1.34	0.0528
1.38	0.0544
1.42	0.0560
1.46	0.0575
1.50	0.0591
1.54	0.0607
1.58	0.0623
1.62	0.0638
1.66	0.0654
1.70	0.0670
2.02	0.0796
2.06	0.0812

(7) Using Tool L-4436A and an inch-pound torque wrench, recheck the turning torque of the differential. The turning torque should be between 5 and 18 inch-pounds.

TRANSFER SHAFT BEARING

(1) Use Tool L-4434 to remove the retaining nut and washer. Remove the transfer shaft gear using Tool L-4407.

(2) Install a 2.29 mm (.090 inch) and a 1.39 mm (.055 inch) gauging shims on the transfer shaft behind the governor support.

(3) Install transfer shaft gear and bearing assembly and torque the nut to 271 N·m (200 ft. lbs.).

(4) To measure bearing end play:

(4) Attach Tool L-4432 to the transfer gear.

(5) Mount a steel ball with grease into the end of the transfer shaft.

(6) Push and pull the gear while rotating back and forth to insure seating of the bearing rollers.

ADJUSTMENTS (Continued)

(7) Using a dial indicator, measure transfer shaft end play.

(8) Refer to the Transfer Bearing Shim Chart for the required shim combination to obtain the proper bearing setting.

(9) Use Tool L-4434 to remove the retaining nut and washer. Remove the transfer shaft gear using Tool L-4407.

(10) Remove the two gauging shims and install the correct shim combination. Install the transfer gear and bearing assembly.

(11) Install the retaining nut and washer and torque to 271 N·m (200 ft. lbs.). Measure transfer shaft end play, end play should be .05 to .25 mm (.002 to .010 inch).

(12) Measure bearing end play as outlined in Step (4). End play should be between .05 mm and .25 mm (.002 to .010 inch).

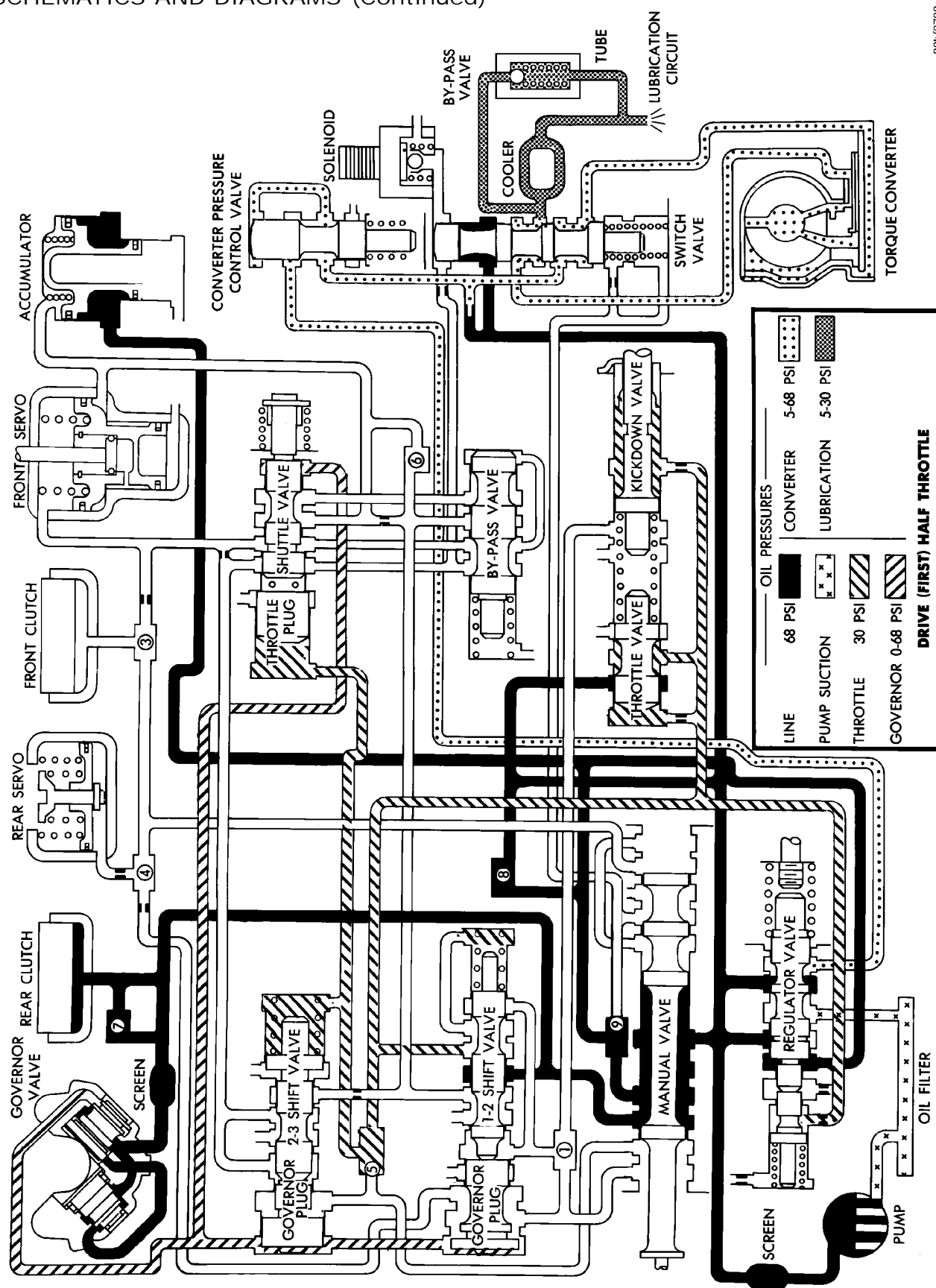
NOTE: If end play is too high, install a .05 mm (.002 inch) thinner shim combination. If end play is too low, install a .05 mm (.002 inch) thicker shim combination. Repeat until .05 to .25 mm (.002 to .010 inch) end play is obtained.

End Play (with 2.29 mm and 1.39 mm gauging shims installed)		Required Shim Combination	Total Thickness	
mm	inch		mm	inch
.0	.0	2.29 + 1.39	3.68	.145
.05	.002	2.29 + 1.39	3.68	.145
.10	.004	2.29 + 1.39	3.68	.145
.15	.006	2.29 + 1.39	3.68	.145
.20	.008	2.29 + 1.34	3.63	.143
.25	.010	2.29 + 1.29	3.58	.141
.30	.012	2.29 + 1.24	3.53	.139
.35	.014	2.29 + 1.19	3.48	.137
.40	.016	2.29 + 1.14	3.43	.135
.45	.018	2.29 + 1.09	3.38	.133
.50	.020	2.29 + 1.04	3.33	.131
.55	.022	2.29 + .99	3.28	.129
.60	.024	1.84 + 1.39	3.23	.127
.65	.026	1.84 + 1.34	3.18	.125
.70	.028	1.84 + 1.29	3.13	.123
.75	.030	1.84 + 1.24	3.08	.121
.80	.032	1.84 + 1.19	3.03	.119
.85	.034	1.84 + 1.14	2.98	.117
.90	.036	1.84 + 1.09	2.93	.115
.95	.038	1.84 + 1.04	2.88	.113
1.00	.040	1.84 + .99	2.83	.111
1.05	.042	1.39 + 1.39	2.78	.109
1.10	.044	1.39 + 1.34	2.73	.107
1.15	.046	1.39 + 1.29	2.68	.105
1.20	.048	1.39 + 1.24	2.63	.103
1.25	.049	1.39 + 1.19	2.58	.101
1.30	.050	1.39 + 1.14	2.53	.099
1.35	.052	1.39 + 1.09	2.48	.097
1.40	.055	1.39 + 1.04	2.43	.095
1.45	.057	1.39 + .99	2.38	.093
1.50	.059	.94 + 1.39	2.33	.091
1.55	.061	.94 + 1.34	2.28	.089
1.60	.063	.94 + 1.29	2.23	.087

TRANSFER BEARING SHIM CHART

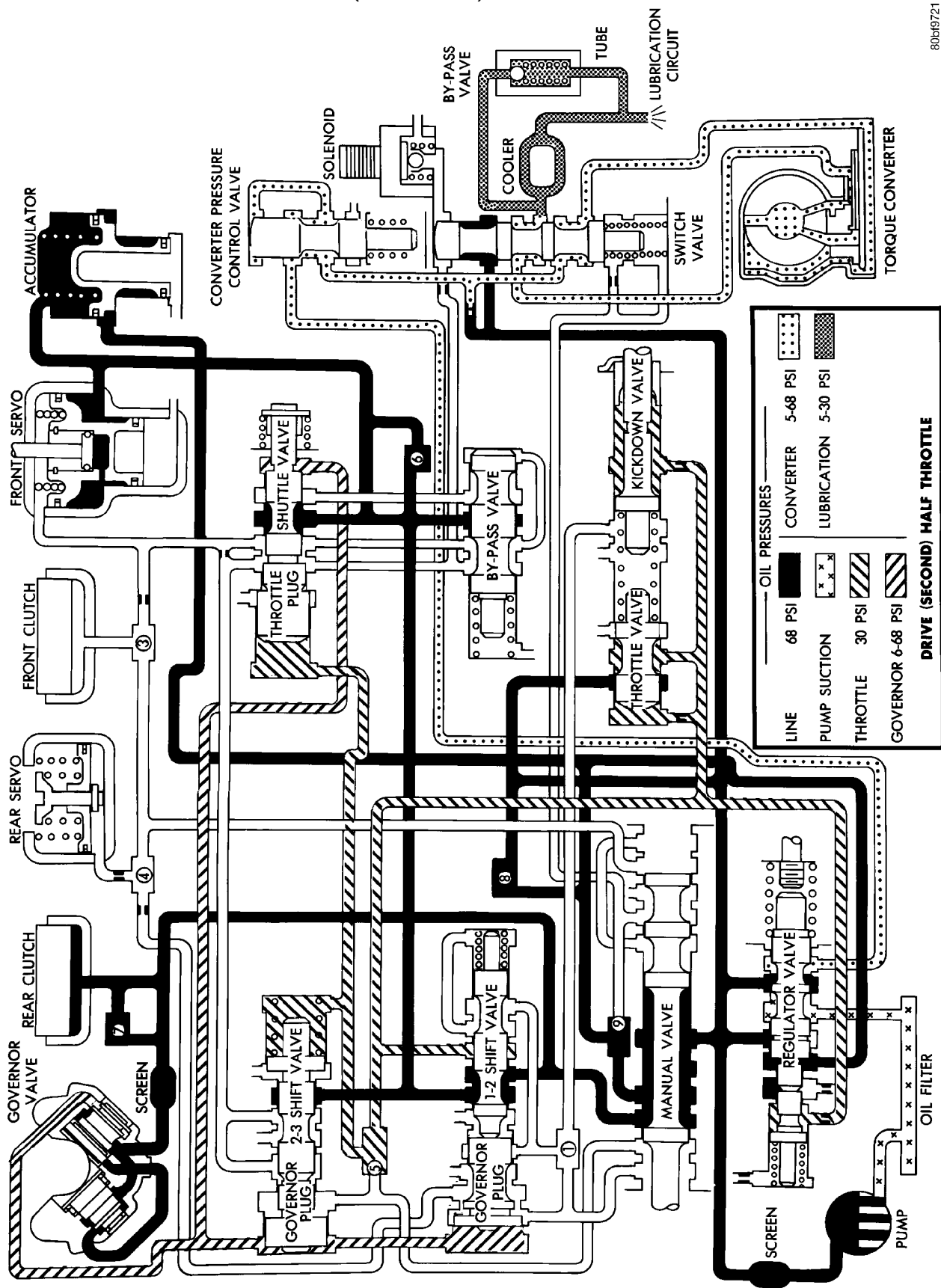
SCHEMATICS AND DIAGRAMS

31TH TRANSAXLE HYDRAULIC SCHEMATIC



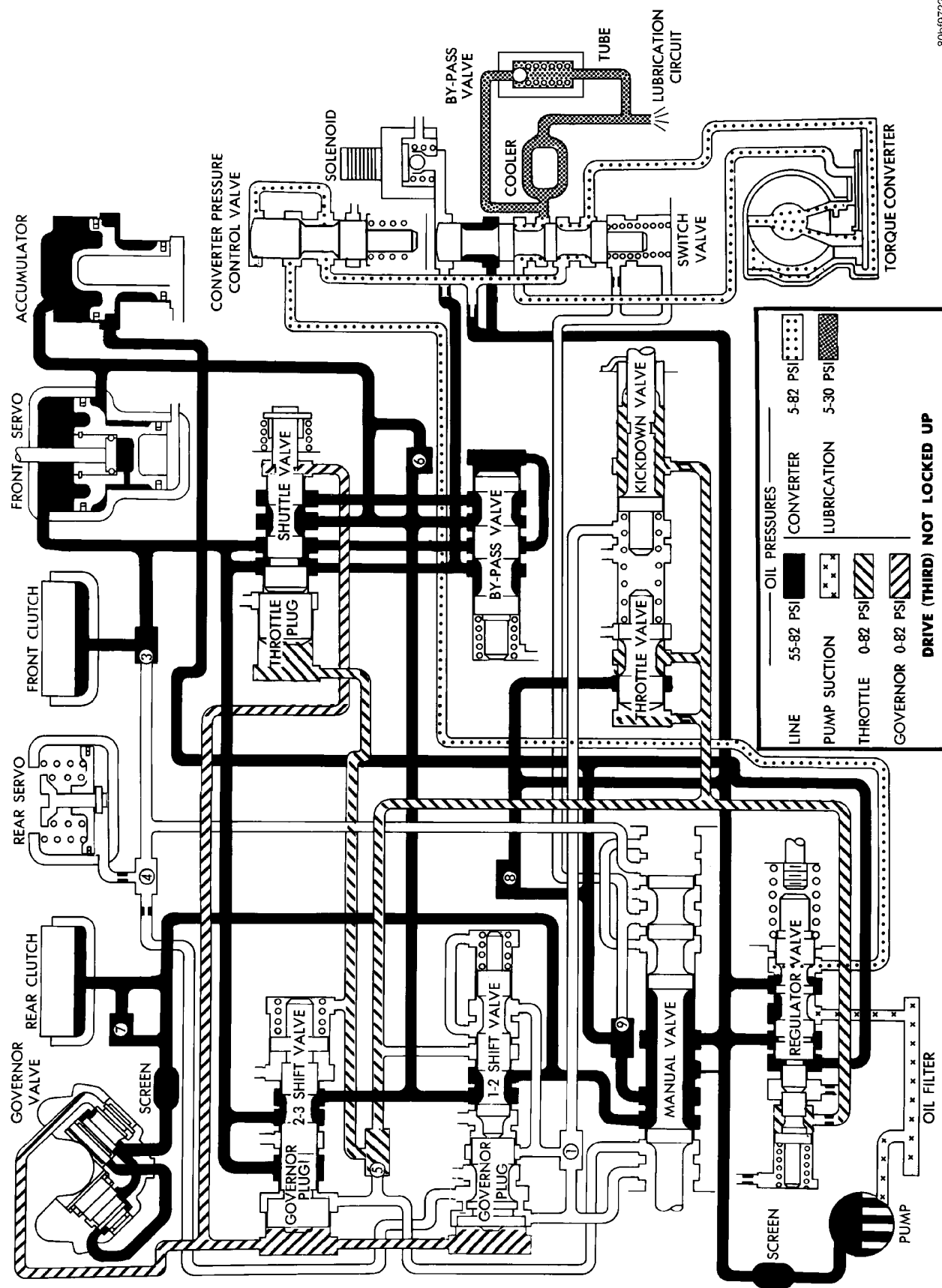
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SCHEMATICS AND DIAGRAMS (Continued)



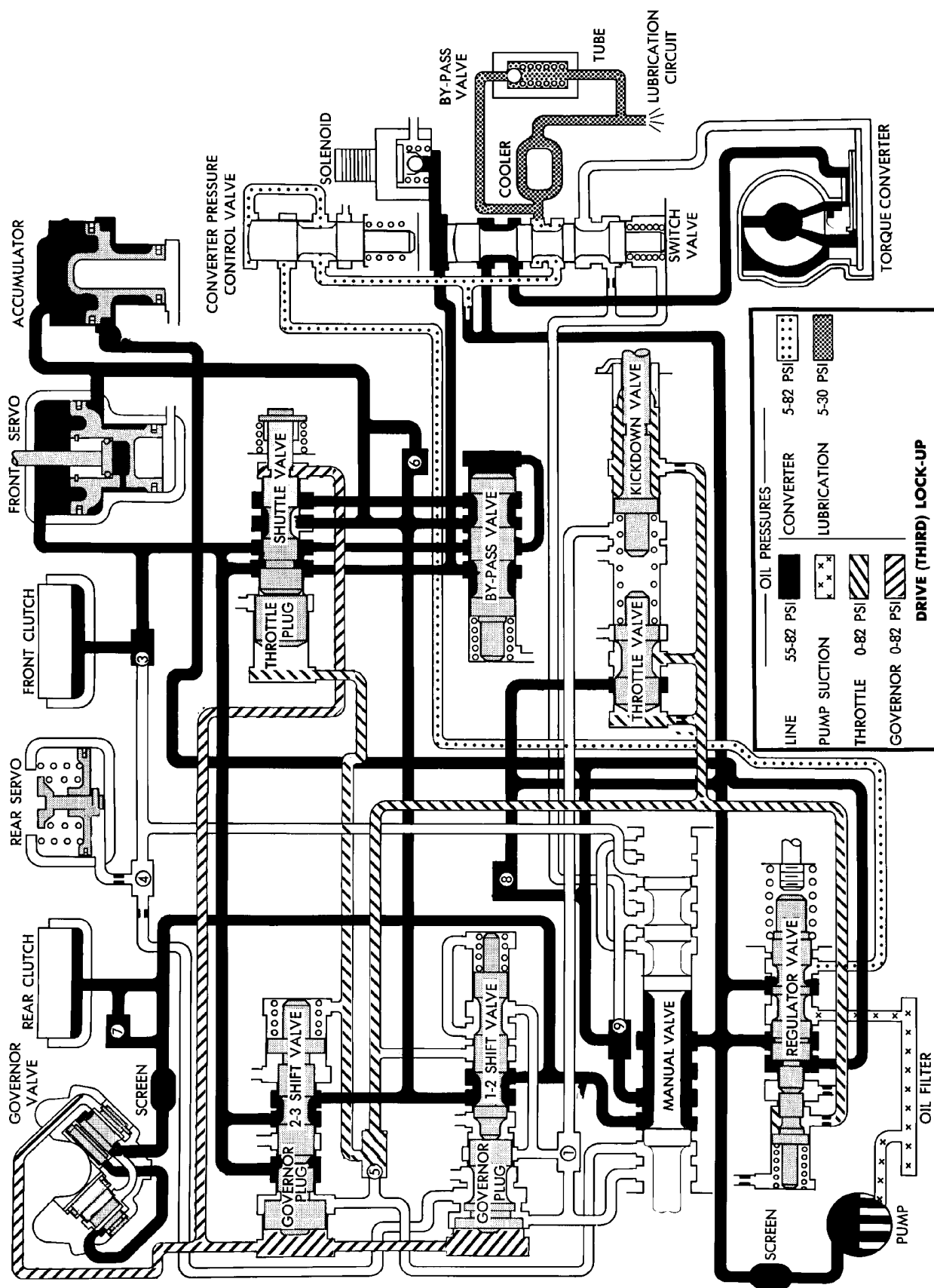
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31TH TRANSAXLE HYDRAULIC SCHEMATIC



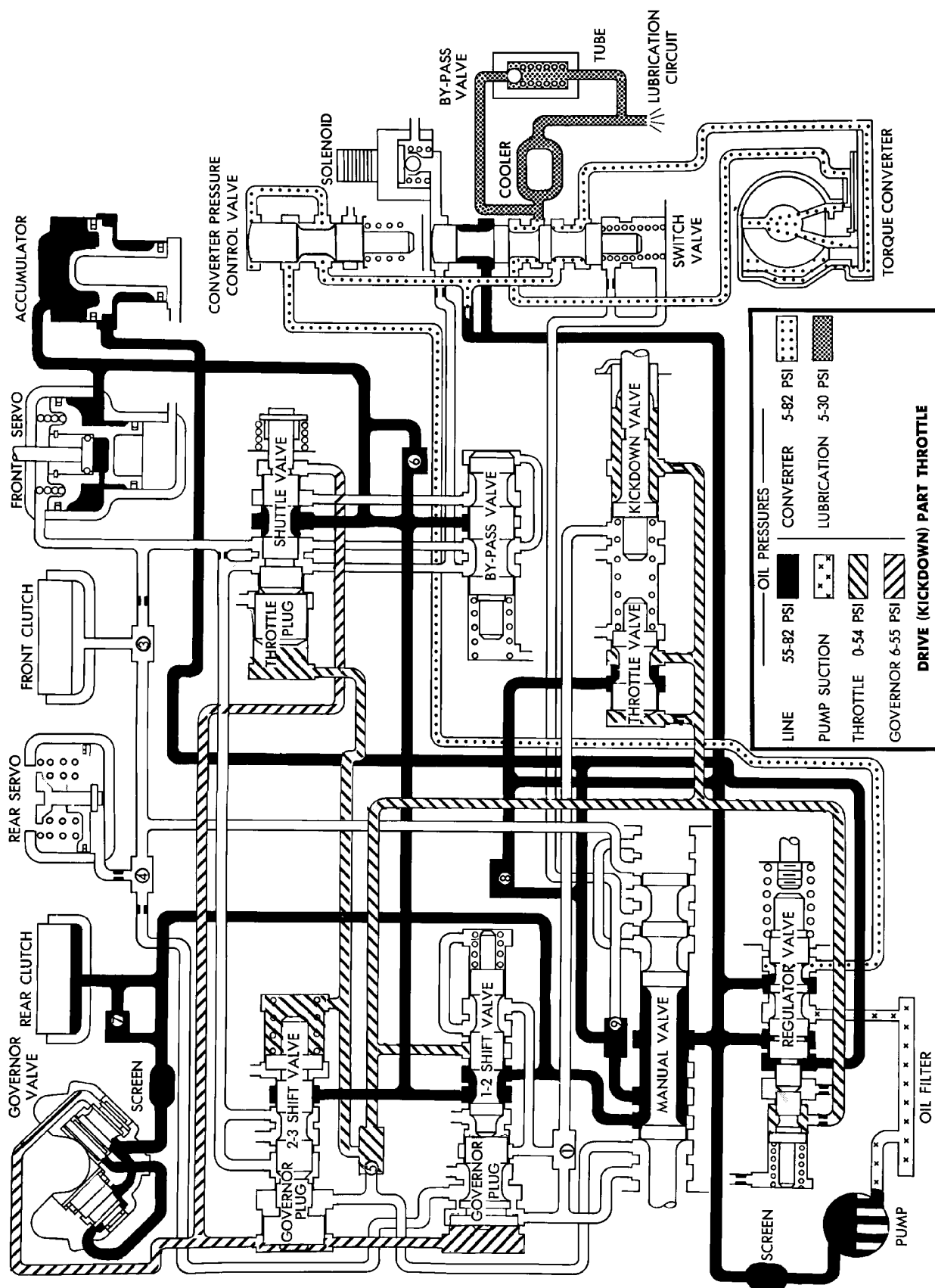
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31TH TRANSAXLE HYDRAULIC SCHEMATIC



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SCHEMATICS AND DIAGRAMS (Continued)

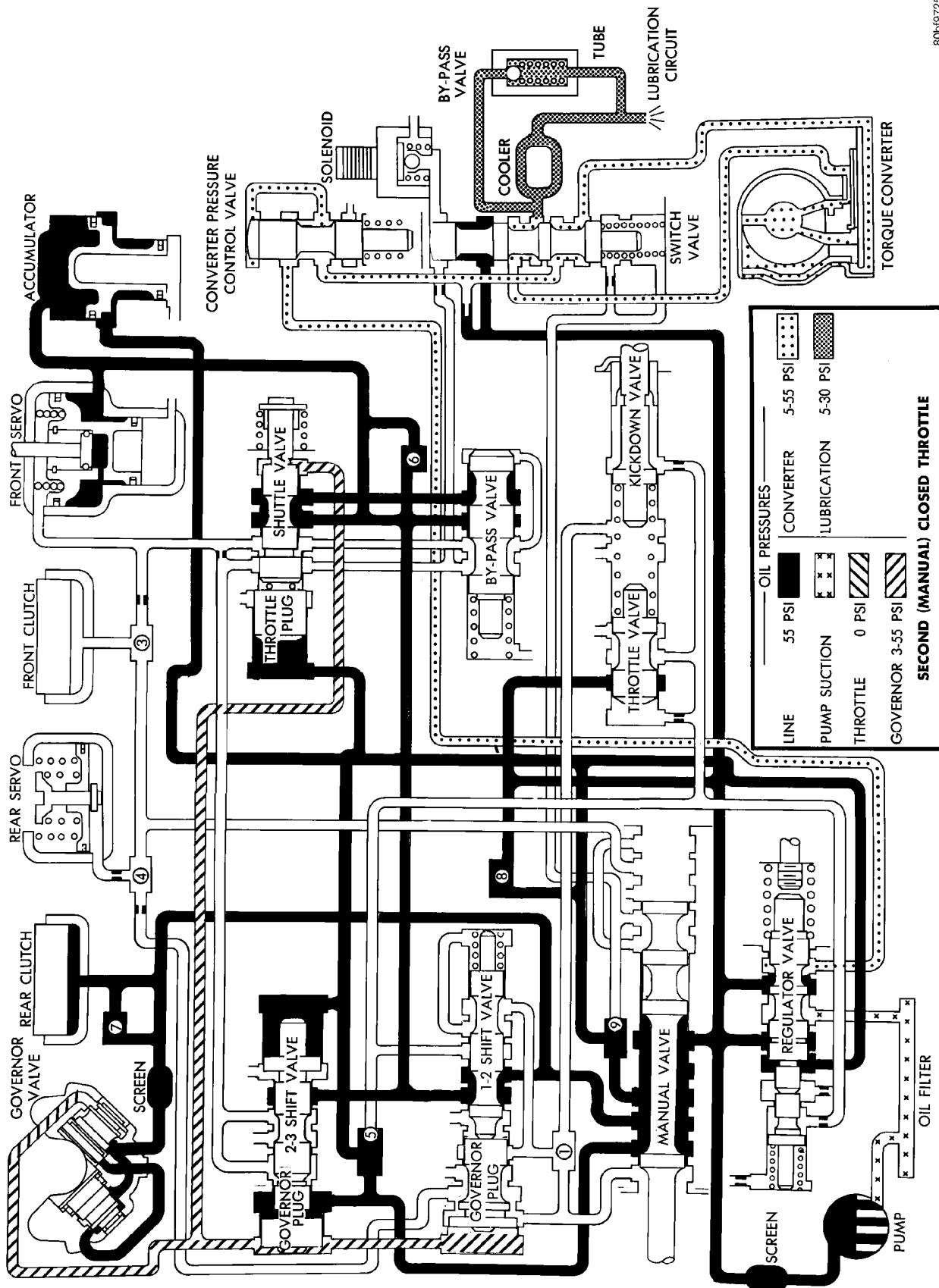


31TH TRANSAXLE HYDRAULIC SCHEMATIC

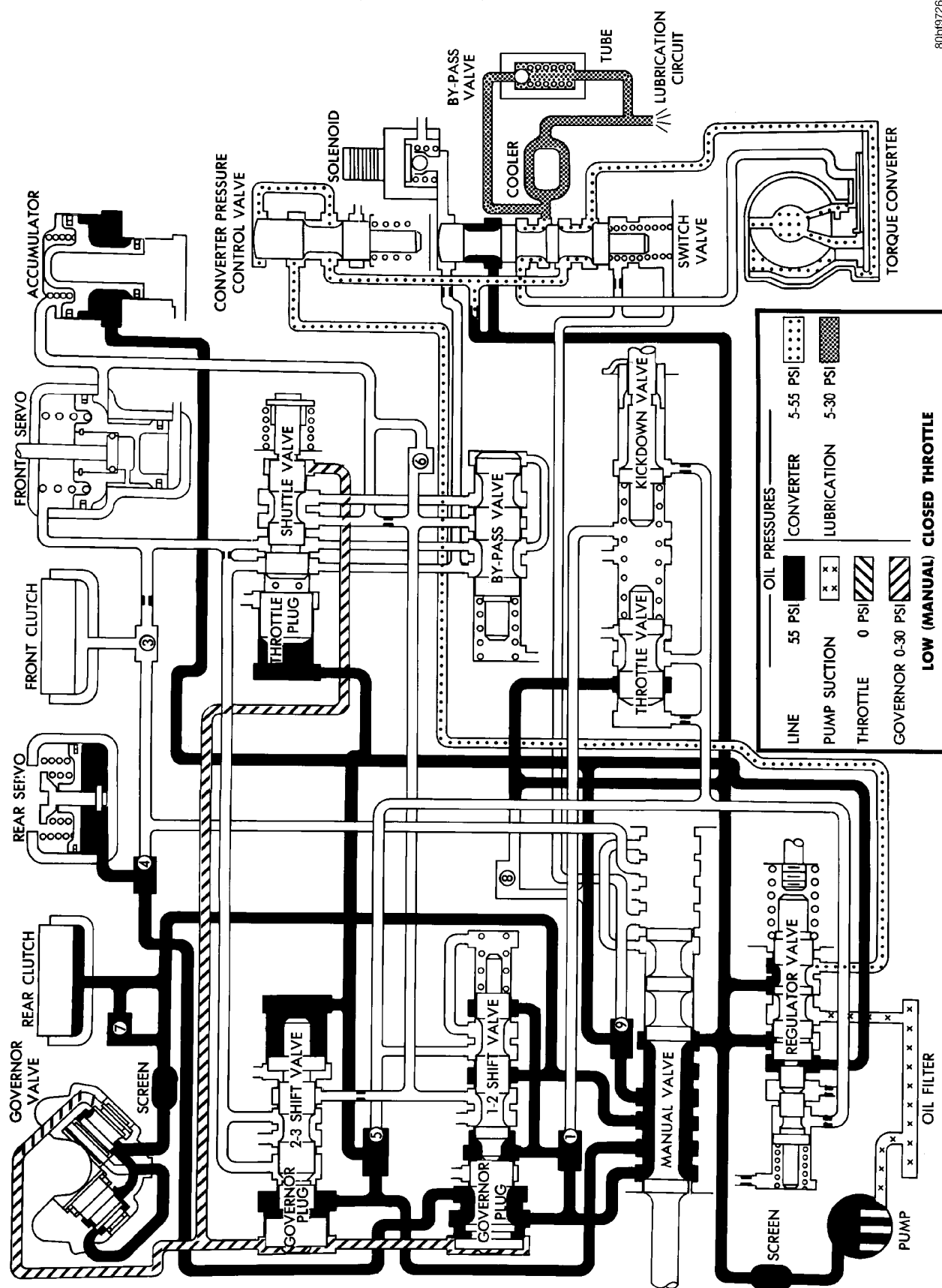
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SCHEMATICS AND DIAGRAMS (Continued)

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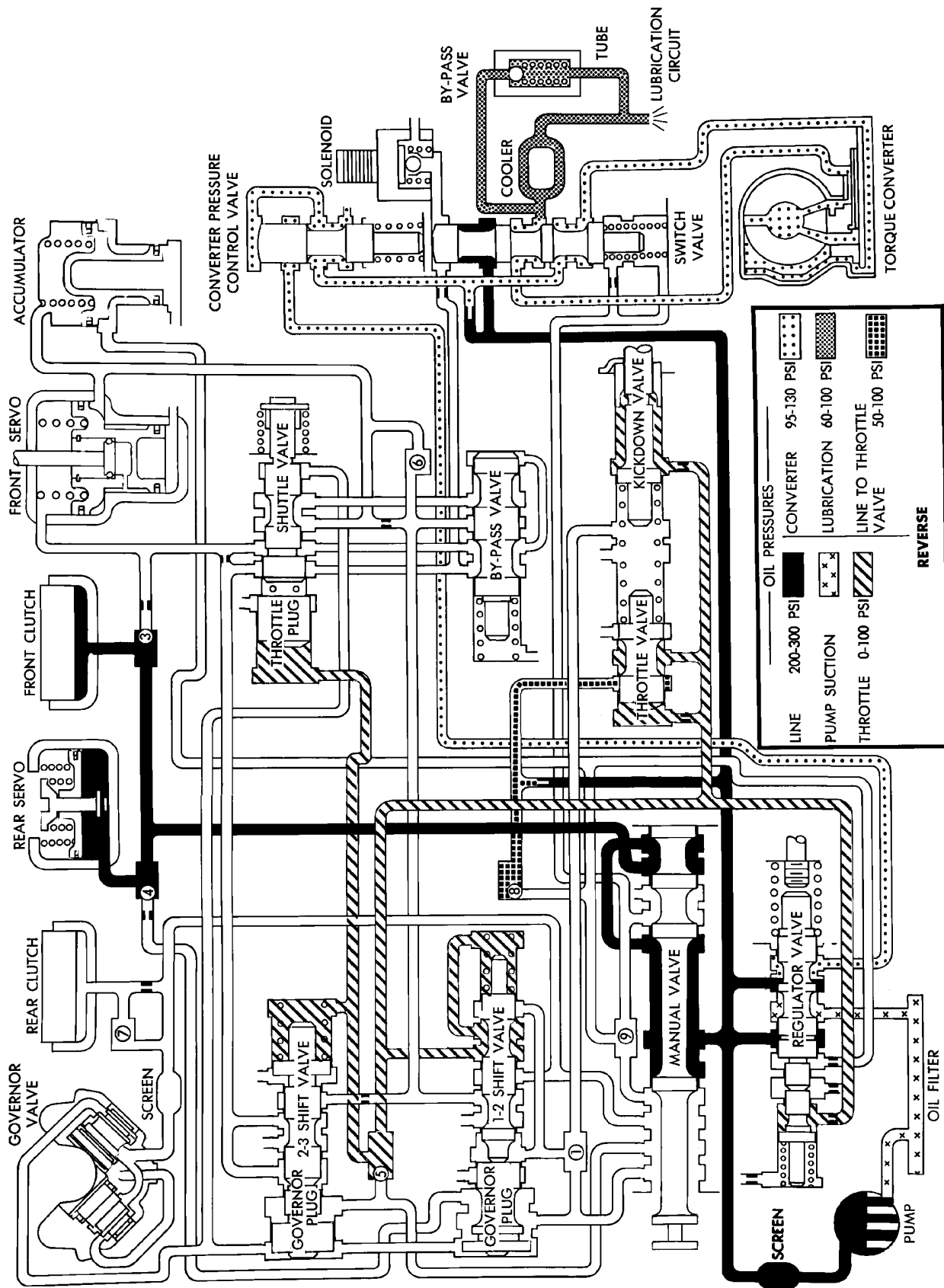
SCHEMATICS AND DIAGRAMS (Continued)



31TH TRANSAXLE HYDRAULIC SCHEMATIC

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SCHEMATICS AND DIAGRAMS (Continued)



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31TH TRANSAXLE HYDRAULIC SCHEMATIC

SPECIFICATIONS

31TH AUTOMATIC TRANSAXLE

Type . Automatic three speed with torque converter
and integral differential
Torque Converter Diameter 241 millimeters
(9.48 in.)

Oil Type . Mopar® ATF+3 (Automatic Transmission
Fluid) Type 7176

Cooling Method . Water Heat Exchanger and/or air
to oil heat exchanger

Lubrication Pump (internal-external gear-type
Transmission Gear Ratios

First Gear 2.69
Second Gear 1.55
Third Gear 1.00
Reverse Gear 2.10

Band Adjustment

Kickdown—Backed Off From 8 N•m
(72 in. lbs.) 2 1/4 Turns

Low-Reverse—Backed Off From 5 N•m
(41 in. lbs.) 3 1/2 Turns

Clutch Pack Clearances

Front Clutch (Not Adjustable) 1.27-2.79mm
(0.050-0.110 in.)

Rear Clutch 0.71-1.10mm (0.028-0.043 in.)

End Play

Input Shaft 0.19–1.50 mm (.008–.060 in.)

Front Clutch Retainer 0.76–2.69 mm
(.030–.106 in.)

Front Carrier 0.89–1.45 mm (.007–.057 in.)

Front Annulus Gear . 0.09–0.50 mm (.0035–.020 in.)

Planet Pinion 0.15–0.59 mm (.006–.023 in.)

Reverse Drum 0.76–3.36 mm (.030–.132 in.)

Oil Pump Clearances

Outer Gear To Pocket 0.045-0.141mm
(0.0018-0.0056 in.)

Outer Gear Side Clearance 0.020-0.046mm
(0.0008-0.0018 in.)

Inner Gear Side Clearance 0.020-0.046mm
(0.0008-0.0018 in.)

Tapered Roller Bearing Settings

Differential Assembly . 6 to 12 in. lbs. Drag Torque
Output Hub 0 to 3 in. lbs. Drag Torque
Transfer Shaft 0.002 to 0.010 in. End Play
Overall Drag At Output Hub . . 3 to 16 in. lbs. Drag
Torque

Thrust Washers

Reaction Shaft Support (No. 1) 1.55–1.60 mm
(.061–.063 in.)

Thrust Washers

Rear Clutch Retainer (No. 2) 1.55–1.60 mm
(.061–.063 in.)

Output Shaft (No. 3) (Select) 1.98–2.03 mm
(.077–.080 in.)

Output Shaft (No. 3) (Select) 2.15–2.22 mm
(.085–.087 in.)

Output Shaft (No. 3) (Select) 2.34–2.41 mm
(.092–.095 in.)

Front Annulus (No. 4) 2.95–3.05 mm
(.116–.120 in.)

Front Carrier (Nos. 5&6) 1.22–1.28 mm
(.0948–.050 in.)

Sun Gear-Front (No. 7) 0.85–0.91 mm
(.033–.036 in.)

Sun Gear-Rear (No. 8) 0.85–0.91 mm
(.033–.036 in.)

Rear Carrier (Nos. 9&10) 1.22–1.28 mm
(.0948–.050 in.)

Rev. Drum (No. 11) . . 1.55–1.60 mm (.061–.063 in.)

31TH TRANSAXLE TORQUE SPECIFICATIONS

DESCRIPTION TORQUE

Bell Housing Cover Bolts 12 N•m (105 in. lbs.)

Cooler Line Clamps 2 N•m (18 in. lbs.)

Diff. Bear. Ret. To Case Bolt . . 34 N•m (300 in. lbs.)

Diff. Cover To Case Bolt 19 N•m (165 in. lbs.)

Exten. Hous. To Case Bolt 28 N•m (250 in. lbs.)

Drive Plate To Crankshaft Bolts 95 N•m
(70 ft. lbs.)

Drive Plate To Torque Conv. Bolts 68 N•m
(50 ft. lbs.)

Fluid Filter Screw 5 N•m (45 in. lbs.)

Governor Counterweight Screw 28 N•m
(250 in. lbs.)

Governor To Support Bolt 7 N•m (60 in. lbs.)

Kickdown Band Adj. Lock Nut . . 47 N•m (35 ft. lbs.)

Left Motor Mount Bolts 54 N•m (40 ft. lbs.)

Manual Cable To Trans. Case Bolt 28 N•m
(250 in. lbs.)

Manual Control Lever Screw . . 12 N•m (105 in. lbs.)

Oil Pan To Trans. Case Screw 19 N•m
(165 in. lbs.)

Output Gear Strap Bolts 23 N•m (17 ft. lbs.)

Output Shaft Nut 271 N•m (200 ft. lbs.)

Park/Neutral Switch 34 N•m (25 ft. lbs.)

Pressure Check Plug 5 N•m (45 in. lbs.)

Pump To Case Bolts 31 N•m (275 in. lbs.)

Reaction Shaft Assembly Bolt . . 28 N•m (250 in. lbs.)

Rear Cover To Case Screw 19 N•m (165 in. lbs.)

Reverse Band Adj. Lock Nut . . . 14 N•m (125 in. lbs.)

Reverse Band Shaft Plug 7 N•m (60 in. lbs.)

Ring Gear Screw 95 N•m (70 ft. lbs.)

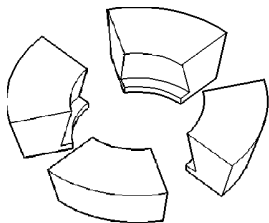
Speedo. To Ext. Hous. Screw . . . 7 N•m (60 in. lbs.)

SPECIFICATIONS (Continued)

DESCRIPTION	TORQUE
Sprag Ret. To Transfer Case Bolt	28 N·m (250 in. lbs.)
Starter To Trans. Bell Bolts	54 N·m (40 ft. lbs.)
Stirrup Strap Ret. Bolts	23 N·m (200 in. lbs.)
Trans. To Cyl. Block Bolt	95 N·m (70 ft. lbs.)
Transfer Shaft Nut	271 N·m (200 ft. lbs.)
Transfer Gear Strap Bolts	23 N·m (17 ft. lbs.)
Valve Body Assy. To Case Bolts	12 N·m (105 in. lbs.)
Valve Body Screw	5 N·m (45 in. lbs.)

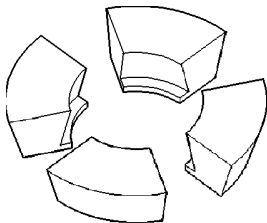
SPECIAL TOOLS

31TH AUTOMATIC TRANSAXLE

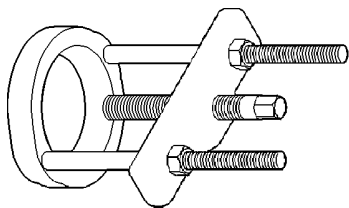


c-293-45-8011d408

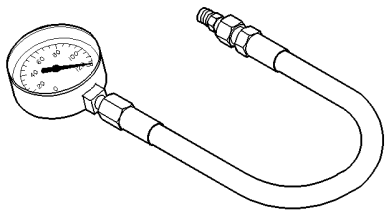
Adapter Blocks C-293-45



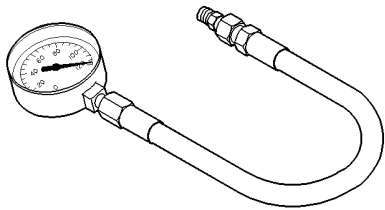
Adapter Blocks C-293-52



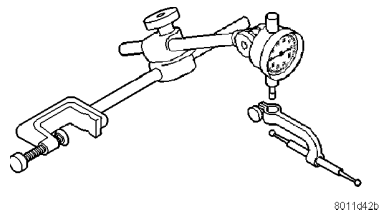
Puller Press C-293-PA



Pressure Gauge (Low) C-3292

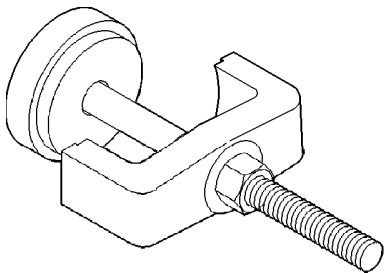


Pressure Gauge (High) C-3293SP

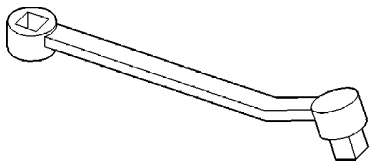


8011d42b

Dial Indicator C-3339

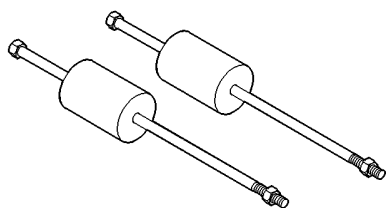


Spring Compressor C-3575-A

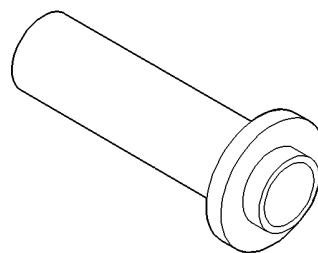


Band Adjusting Adapter

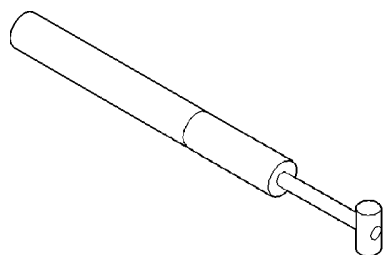
SPECIAL TOOLS (Continued)



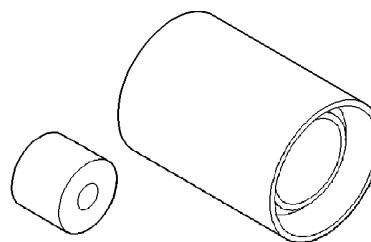
Oil Pump Puller C-3752



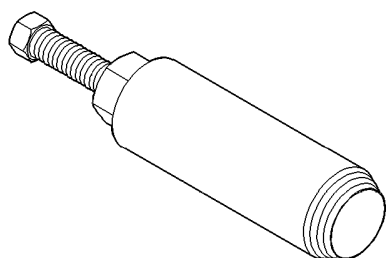
Seal Installer C-4193A



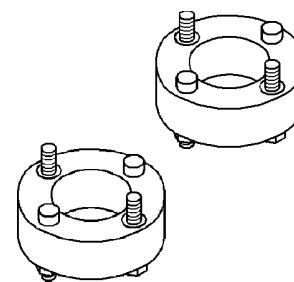
Throttle Setting Gauge



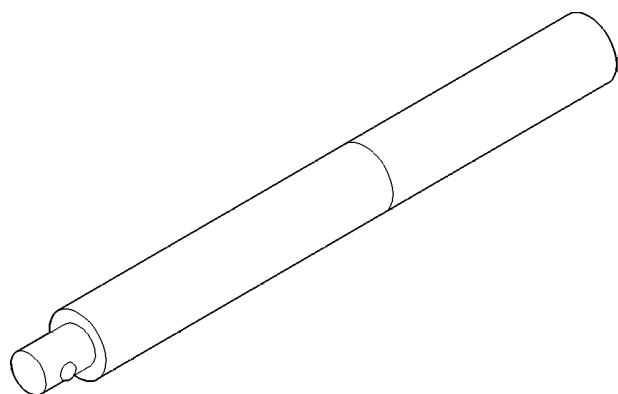
Bearing Installer C-4637



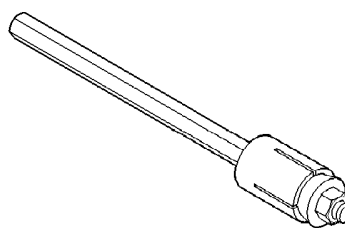
Seal Puller C-3981B



Adapter C-4658

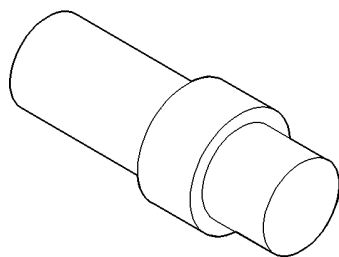


Universal Handle C-4171

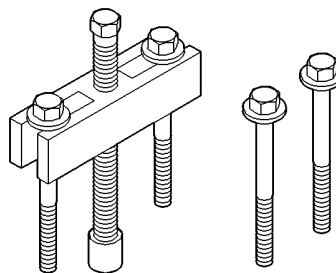


Torque Tool C-4995

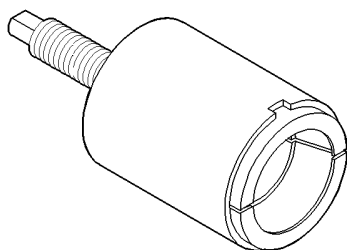
SPECIAL TOOLS (Continued)



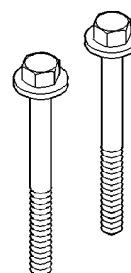
Adapter C-4996



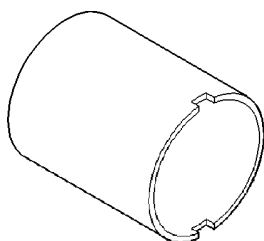
Gear Puller L-4407A



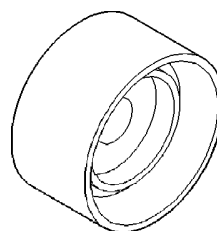
Remover Kit L-4406



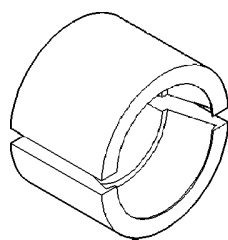
Puller L-4407-6



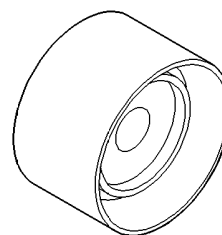
Bearing Remover Cup L-4406-1



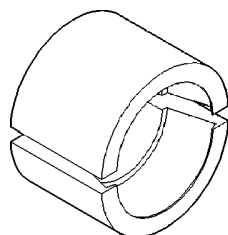
Bearing Installer L-4408



Bearing Remover Jaws L-4406-2

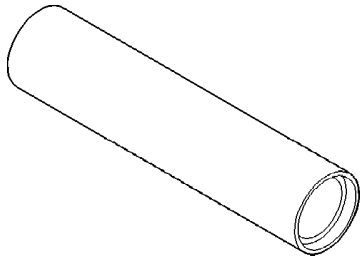


Bearing Installer L-4410

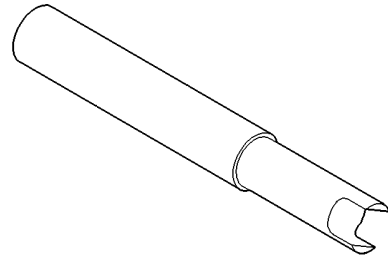


Adapter L-4406-3

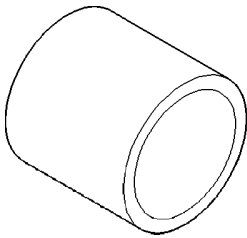
SPECIAL TOOLS (Continued)



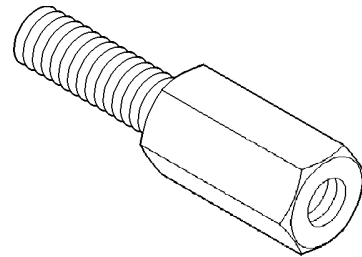
Bearing Installer L-4411



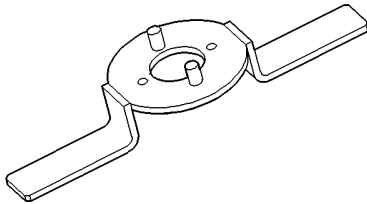
Differential Tool L-4436A



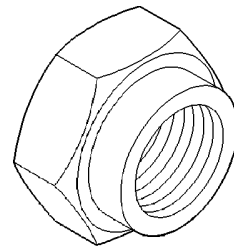
Installer Adapter L-4429-3



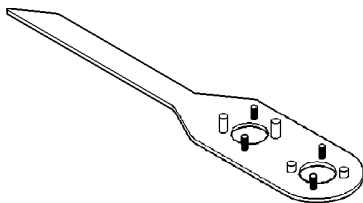
Housing Remover Adapter L-4437



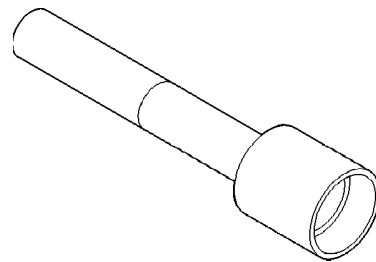
Gear Checking Plate L-4432



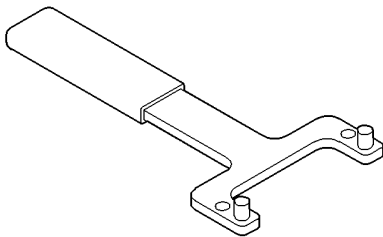
Starter Nut L-4439



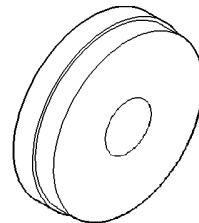
Gear Removing Plate L-4434



Transfer Shaft Remover-Installer L-4512

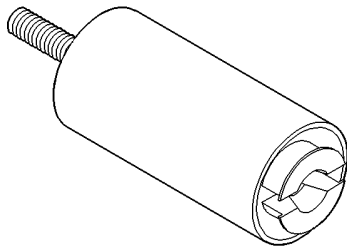


Bearing Puller L-4435

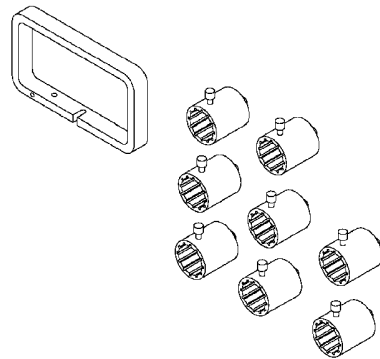


Bearing Cup Remover L-4517

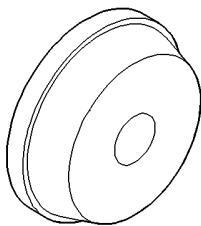
SPECIAL TOOLS (Continued)



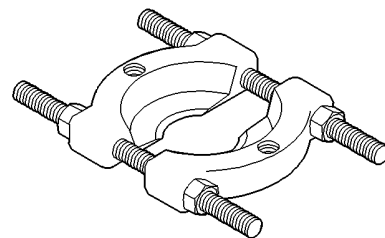
Special Jaw Set L-4518



End Play Socket Set 8266



Installer L-4520



Bearing Splitter P-334